FACTORS INFLUENCING GERIATRIC SPECIALIZATION INTENTION. A CROSS-SECTIONAL STUDY OF CLINICAL MEDICAL AND NURSING STUDENTS IN GHANA

Grace Karikari

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Doctoral Committee

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David K. Lohrmann, Ph.D., MCHES, Co-Chair

_____

Lesa Huber, Ph.D., Co-Chair

_____

Margaret Adamek, MSW, Ph.D.

_____

Oghenekaro Omodior, MPH, Ph.D.

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I dedicate this dissertation to my dearest husband, Dr. Isaac Karikari for being my rock and motivation. This achievement would not have been possible without you by my side.

To my children, Tim-Aizaek and Obaapa Emerald, you are mummy's joy.

I also dedicate this to my extraordinary research committee members, Drs. David Lohrmann, Lesa Huber, Margaret Adamek, and Karo Omodior. Thank you for your wisdom, mentoring, and technical support.

Much appreciation to my parents (Bishop Festus and Felicia Yeboah-Asuamah), siblings, extended family, friends, colleagues, well-wishers and loved ones. Thank you all for your support and prayers throughout this journey.

To God be the glory for the great things He has done and for the greater achievements ahead. Amen.

Grace Karikari

FACTORS INFLUENCING GERIATRIC SPECIALIZATION INTENTION. A CROSS-SECTIONAL STUDY OF CLINICAL MEDICAL AND NURSING STUDENTS IN GHANA

Background: The population of older persons in Ghana is increasing. Yet, the exact number of practicing health professionals with geriatric-related expertise to provide skilled services to the aging population in the country is unknown. Our understanding of future health providers' consideration of a career in geriatrics and attitudes toward geriatric patients is also very limited.

Aim: The overarching purpose of this dissertation was to closely examine the intrapersonal and interpersonal factors associated with intention to choose a geriatric -related career among clinical medical and nursing students in a public institution in Ghana. Specifically, two related sub-studies were explored in this dissertation. The first sub-study examined the association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a geriatric specialty among clinical medical and nursing students. The second sub-study assessed (a) differences in the attitudes of final year clinical medical and nursing students towards older persons; and (b) the relationship between the quality of students' experiences with older persons and their attitudes.

Method: Medical and nursing students undergoing clinical training at the Komfo Anokye Teaching Hospital in Kumasi, Ghana, voluntarily participated in this cross-sectional study. The survey was administered online via Qualtrics.

Sub-study 1: Data were analyzed using Poisson multiple regression (N=314). For medical students, personal interest was the best predictor of intention to specialize in geriatrics (B =.462, S.E = .0592, p = .000). After adjusting for other variables in the model, medical students with moderate to strong interest were 1.6 more likely to express an intention to specialize in geriatrics

compared to those with low to minimal interest. For nursing students, personal interest was the sole significant predictor of intention to specialize in geriatrics (B=.456, S.E = .1386, p = .001). After adjusting for other variables in the model, nursing students with moderate to strong interest were 1.6 times more likely to express an intention to specialize in geriatrics compared to those with low to minimal interest.

Sub-study 2: Data analysis involved two-sample t-tests and a one-way ANOVA (N=135). Overall, most participants (82.2%) held positive attitudes towards older persons. Medical students had significantly more positive attitudes toward older persons (3.50 ± 0.44) than nursing students (3.26 ± 0.38) (t [133] = 3.257, p = .001). The association between students' attitudes and the quality of their experiences with older persons was significant (F [2, 132] = 7.062, p = .001). Students whose experiences with older persons were negative had the least positive attitudes.

Conclusion: Interventions geared towards increasing geriatric-oriented healthcare providers in Ghana should focus on enhancing students' interests and cultivating positive attitudes towards older patients through both clinical and community-based exposures.

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David K. Lohrmann, Ph.D., MCHES

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Lesa Huber, Ph.D

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Margaret Adamek, MSW, Ph.D

_____

Oghenekaro Omodior, MPH, Ph.D

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CHAPTER 1: INTRODUCTION

1.1 Background

With an annual growth of 1.10 % (about 83 million people), the global population is expected to rise from 7.6 billion in 2017 to 8.6 billion by 2030, 9.8 billion by 2050, and 11.2 billion by 2100 (United Nations [UN], 2017a). However, the pace and intensity of growth are different among countries and continents (Anderson & Hussey, 2000; Beard et al., 2016). Projections indicate that half of the world's population will be concentrated in only nine countries between the years 2017 and 2050 (UN, 2017a). In 2017, a significant proportion of the world's population was concentrated in Asia (60%, 4.5 billion people) and Africa (17%, 1.3 billion people) (UN, 2017a). Africa's proportion of the global population is expected to increase to 26% by 2050 and to near 40% by 2100 (UN, 2017a).

1.1.1 Global aging

In line with the global population increase is the growth occurring in the older population, persons aged 60 years and above. This increase is unprecedented and faster than all other age groups (UN, 2017a). Older persons, older people, older adults, and the aging population in this paper were used interchangeably, referring to persons aged 60 years and above. From approximately 200 million in 1950, older persons aged 60 years and above tripled in number to about 600 million in 2000, then increased again to 962 million or about 13% of the global population in 2017 (UN, 2017a; World Health Organization [WHO], 2018). Of the 962 million older adults, 137 million were aged 80 years and beyond (WHO, 2018). The number of older persons over 80 years is expected to triple to 427 million by 2050 and, to 909 million by 2100 (UN, 2017a). At the current annual growth rate of 3%, the population size of older persons is anticipated to double to nearly 2.1 billion by 2050 and triple to 3.1 billion by 2100 (UN,

2017a). Additionally, for the first time in history, children under 15 years old will be outnumbered by older adults by the year 2045 (Dotchin, Akinyemi, Gray, & Walker, 2012; WHO, 2018). As indicated in the *World Population Ageing Report*, most regions of the world will have a quarter of their population aged 60 years or older by 2050 (UN, 2017b).

The growth of the population of older persons in the developing regions[11] is much higher than the developed regions (Beard et al., 2016; UN, 2017b; WHO, 2018). As shown in Figure 1, two-thirds of the world's older persons were residing in developing countries in 2017 (UN, 2017b). By 2050, about 8 out of 10 older adults will be living in developing regions (Dey, 2017; UN, 2017b). This changing demographic trend has been attributed to the decrease in fertility rates and increase in longevity worldwide (Beard et al., 2016; Kinesella, 2000; UN, 2017b). Projections in the *2017 Revision of the World Population Prospects* indicate that the world population's growth rate will increase until the end of the 21st century, then continuously decline (UN, 2017b). Though decreases in fertility rates are expected globally, a rapid growth in the population of older persons in the least developed areas, including Africa, is anticipated as shown in *Figure 1* (Beard et al., 2016; Dey, 2017). Interestingly, limited publicity concerning aging is available in the developing regions even though their aging population is growing at a faster pace than in developed regions (Kinesella, 2000).

[1] The definitions of developed and developing regions were adopted from the Revised 2017 World Population Prospects by the United Nations (UN, 2017b). According to the UN, "the developed regions include Europe and Northern America plus Australia, New Zealand and Japan, while the developing regions include all other parts of the world" (UN, 2017b, p. 4).

Figure 1: Number of persons aged 60 years or over by development group, from 1980 to 2050

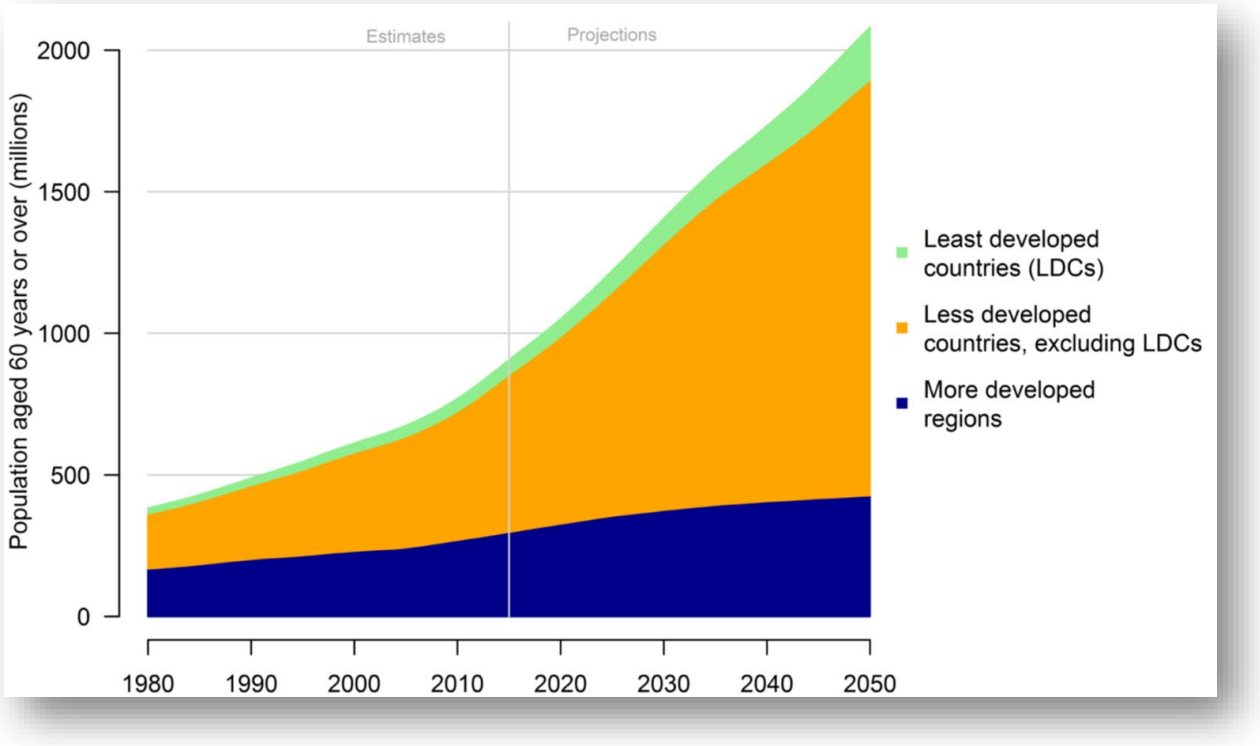


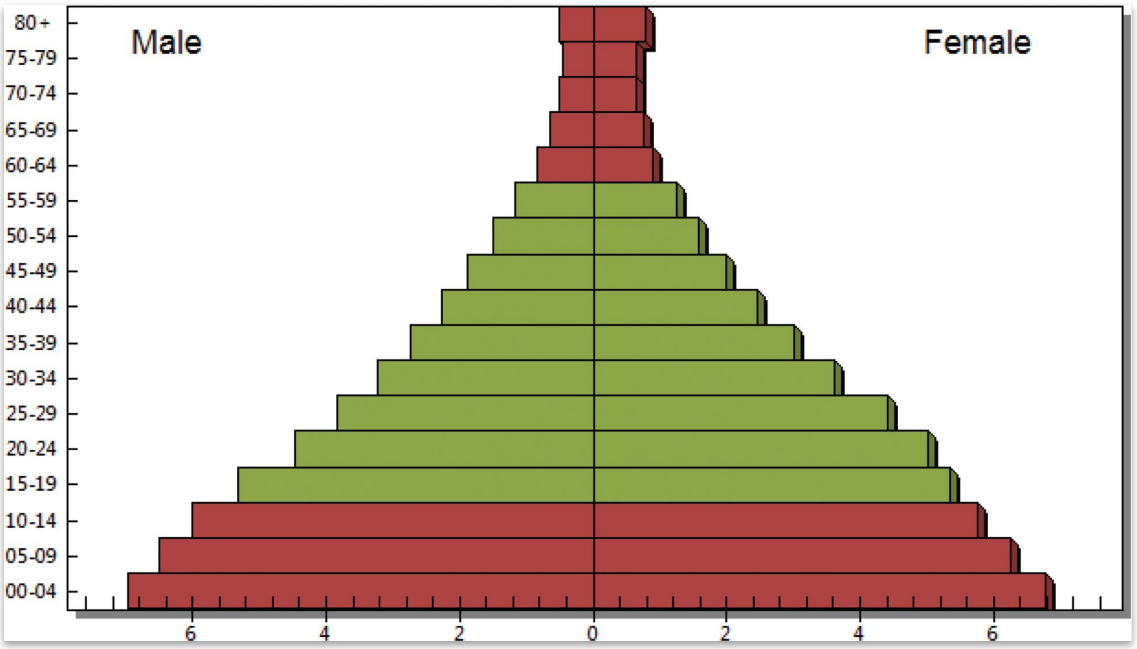
Figure 1 shows the projected increase in the global population of older persons from 1980 to 2050. This image was acquired from the 2017 World Population Ageing Highlights created and published by the United Nations Department of Economic and Social Affairs (UN, 2017b).

1.1.2 Aging in Ghana

Ghana is a developing country and like most countries around the world, is experiencing demographic changes. The country's population growth rate has fluctuated from the 1900s into the 2000s (Oduro & Doss, 2018). Ghana's population growth rate increased from 3.3% in 1990 and to 4.4% in 1999 and then declined to 3.7% in 2000, followed by another increase to 5.9% in 2006 (Oduro & Doss, 2018). In 2011, the growth rate increase to 14% when the oil production began in the country only to drop to 7.3% in 2013 (Oduro & Doss, 2018). Overall, Ghana has maintained an annual average growth rate of approximately 2.4% since 1990 (Kpessa-Whyte, 2018). In actual figures, Ghana's population size increased from 6.7 million in 1990 to 18.9 million in 2000, 24.2 million in 2010 and 28 million in 2017 (Mba, 2010; Kpessa-Whyte, 2018).

As of June 2019, Ghana's population had risen to 30 million individuals (World Population Review, 2019). It is anticipated to rise to 33.4 million by 2025 and to about 50 million by 2050 (Kpessa-Whyte, 2018).

Figure 2: Population pyramid of Ghana, 2010.



General Population Breakdown. Ghana is still considered a youthful country due to its current demographic distribution, 40% of the country's population aged less than 15 years and about 7% aged over 60 years (Aikins & Apt, 2016; Kpessa-Whyte, 2018, Mba, 2010). As shown in Figure 2, 40% of Ghana's population is made up of persons aged 15 years and below. At 52%, people in the 15 to 59 years category are the majority, while those 60 years and over comprise less than 8% of the population. This trend, however, is expected to change as fertility rates are declining while life expectancy rates are on the rise (Kpessa-Whyte, 2018). The country's median age of 17.5 years increased to 18.8 years in 2000 and 20.4 years in 2015. Median age is expected to rise to 26 years by 2050 (World Population Review, 2019).

Aging Population. Although Ghana's population is aging at a relatively slower pace compared to many advanced countries, the trend is substantial and one of the highest in Sub-Saharan Africa (Aikins & Apt, 2016; Mba, 2010). The population of older persons gradually rose from 4.6% in 1960 to 7.2 in 2015 and is expected to increase to 8.6% of the total population by 2030 (Adinkrah, 2018; Aikins & Apt, 2016; Mba, 2010; Kpessa-Whyte, 2018). Despite a slight decline (0.5%) between 2000 and 2010, the absolute number of older persons increased from 215,258 in 1960 to 1,643,978 in 2010 (Kpessa-Whyte, 2018). This represented a 770 percent increase (Kpessa-Whyte, 2018). Approximately, 70% of Ghana's older persons are between 60 to 74 years of age with 10% aged 80 and over (Adinkrah, 2018). The population of older persons will continue to rise and is expected to reach 6.3 million (11.9% of the total population) by 2050 (Kpessa-Whyte, 2018; WHO, 2014).

1.2 Statement of the Problem

Currently, most people around the world, Africa included, foresee attaining age 60 and beyond (Beard et al., 2016). However, though population aging largely represents a human success story, challenges and demands accompany these demographic changes (Kinesella, 2000). Age structure shifts usually lead to changes in services demanded and economic necessities, requiring adjustments in policies and resource allocations to reflect new demographic and societal needs (Kinesella, 2000). As the population ages, the burden of diseases associated with aging, especially, chronic diseases increase, as does morbidity (Dotchin et al., 2012; WHO, 2018).

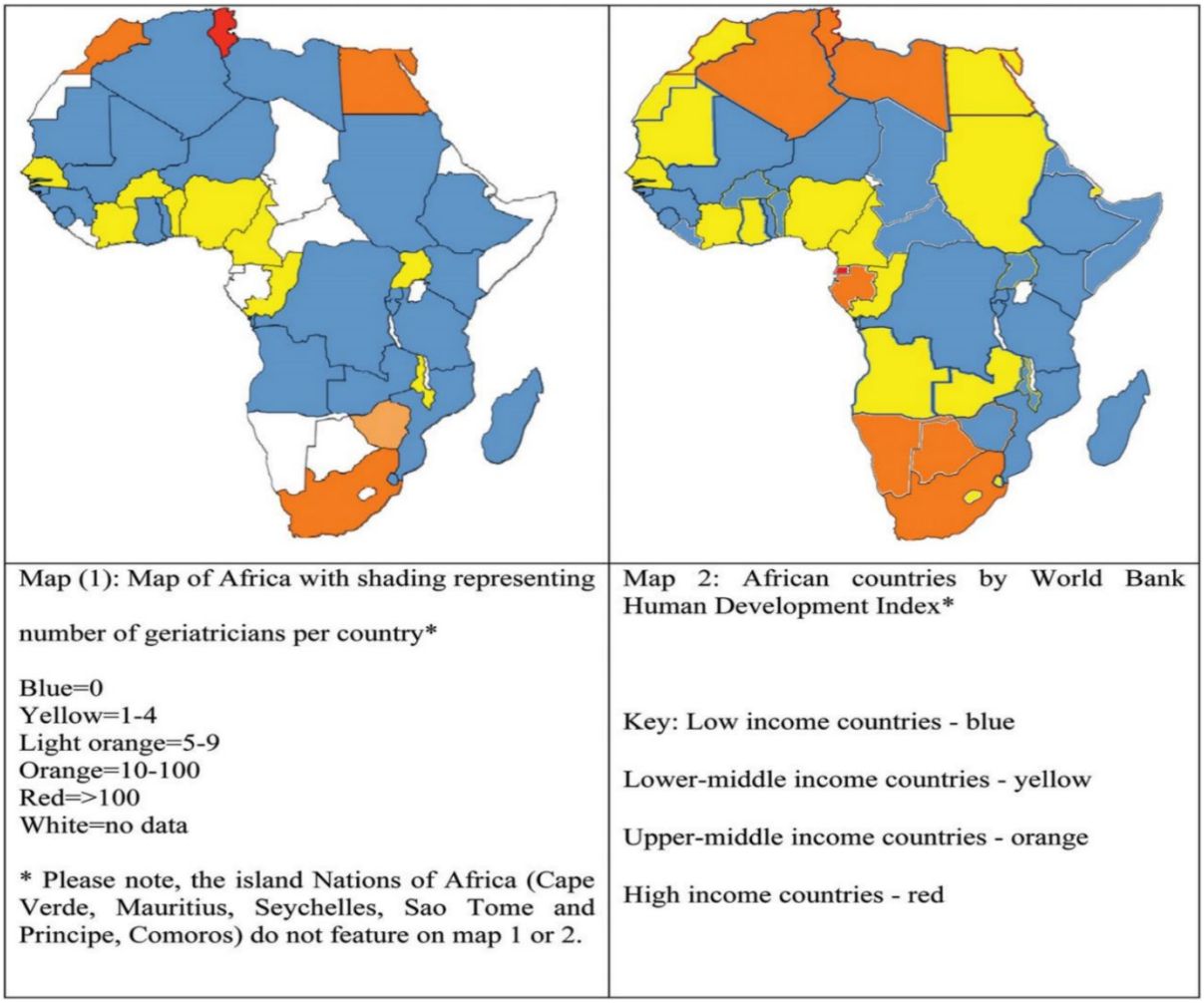
Most disability-adjusted life years in low-income countries are projected to be caused by chronic diseases such as depression, ischaemic heart disease, cerebrovascular disease, and cataracts (Dotchin et al., 2012). Between 2006 and 2015, a total of USD 83 billion economic loss

was incurred as a result of three chronic diseases (heart disease, stroke and diabetes) in 23 low- and middle-income countries (Muka et al., 2015; WHO, 2018). In Africa alone, deaths from chronic diseases are expected to increase by 24% by 2030 (Dotchin et al., 2012). Unfortunately, limited health service professionals, especially physicians and nurses, have the training and knowledge of geriatrics needed to provide care for the growing population of older adults (Dotchin et al., 2012).

Today, the exact number of practicing geriatricians and geriatric specialized nurses in Ghana is unknown (Dovie, 2019). Limited studies have also been conducted on medical and nursing students in Ghana regarding their geriatric career decisions, interest, and intentions. Though a 2004 report by the Ghana News Agency mentioned that one geriatric specialist resides in Ghana, the article did not identify the specialist, including the name, the specific discipline (either nursing, medicine, etc.) or their location (Ghana News Agency, 2004). Additionally, a 2009 WHO study including 199 medical students from the University of Ghana detected some interest in geriatric specialization by 6.7% of the participants, but no records exist indicating that these students actually pursued the specialty (WHO, 2009). This lack of information on the exact number of practicing geriatric specialists in the country was further affirmed in a 2012 study by Dotchin and colleagues (2012) on geriatric education and services provision in Africa. As shown in Figure 3, Ghana, then a lower-middle income country (Map 2) is found in the category (blue) representing countries with no known registered specialist geriatricians (Map 1). According to the authors, the data used in their study was provided by representatives with current working knowledge of the health-care system in each country (Dotchin et al., 2012). This implies that any registered geriatrician in Ghana at the time of data collection in 2012 would have been recognized. In 2016, while establishing the first geriatric fellowship in Ghana, it was still

believed that no geriatricians or related specialized health providers existed in the country (Essuman et al., 2019).

Figure 3: Map of Africa with the number of geriatricians per country[2]



Map (1): Map of Africa with shading representing number of geriatricians per country*

Blue=0
Yellow=1-4
Light orange=5-9
Orange=10-100
Red=>100
White=no data

* Please note, the island Nations of Africa (Cape Verde, Mauritius, Seychelles, Sao Tome and Principe, Comoros) do not feature on map 1 or 2.

Map 2: African countries by World Bank Human Development Index*

Key: Low income countries - blue

Lower-middle income countries - yellow

Upper-middle income countries - orange

High income countries - red

Regrettably, limited scientific investigations focusing on geriatric specialization career preference and Ghanaian medical or nursing students have been conducted since 2012. The only study identified was a qualitative exploration of medical students' perspectives and consideration of geriatrics for future practice (Karikari, Huber, Lohrmann, & Ozdogan, 2020). In a study on future postgraduate choices among medical students in Ghana by Yifieyeh and colleagues

[2] This map and its contents were created and owned by Dotchin et al. (2012). © The Author 2012. Published by Oxford University Press. The figure is allowed to be used freely for dissertation purposes.

(2018), no mention was made of geriatrics as a specialty of choice by any of the students. It was also not mentioned in the study if geriatrics was one of the specialty options available to study participants. The three most preferred specialties mentioned in the study were surgery, internal medicine and pediatrics (Yifieyeh et al., 2018). No studies related to gerontology or geriatric specialization and nursing students in Ghana was identified. With the rising population of older persons in Ghana and the related increase in chronic diseases, the need for a geriatric workforce to meet the projected health demands is paramount (Aikins & Apt, 2016; Essuman et al., 2019; Kpessa-Whyte, 2018). In light of this, it is vital to understand students' geriatric specialty plans and the factors that influence their specialty choices.

1.3 Purpose of the Study and Research Questions

The overarching purpose of this study was to closely examine the intrapersonal and interpersonal factors associated with intention to specialize in geriatric medicine and nursing among clinical medical and nursing students in Ghana. Specifically, three related studies (sub-studies) were explored in this dissertation. The first sub-study examined whether clinical medical and nursing students' intention to specialize in geriatrics was related to their attitudes, past experiences, mentoring opportunities, personal interest, or demographic characteristics. The intent was to identify the factors that best predict students' intention(likelihood) of selecting geriatrics as a future specialty with the assumption that they have the actual control (relevant skills and ability) to do so. The second sub-study assessed differences in the attitudes of final year clinical medical and nursing students towards older persons. The study also examined the relationship between the quality of students' experiences with older persons and their attitudes.

Sub-study 1: (a) Is there significant association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a

geriatric specialty among clinical medical students in Ghana? (b) Is there significant association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a geriatric specialty among clinical nursing students in Ghana?

Sub-study 2: (a) Do the attitudes of final year clinical medical students toward older persons in Ghana differ from the attitudes of final year clinical nursing students? (b) Is there an association between the quality of students' experiences with older persons and their attitudes toward older persons in Ghana?

The intrapersonal and interpersonal factors involved in this dissertation were:

- Attitudes: The general positive or negative perceptions students have about older persons in Ghana.
- Past experiences: The prior relationships and interactions students have had living with or working with older persons and the quality of those relationship. Older persons in this context includes both family and non-family members.
- Mentoring opportunities: The knowledge of practicing geriatric specialists in the students' respective fields in Ghana.
- Personal interest: Students' personal willingness to pursue a career in geriatrics.
- Students' demographics: Age, gender and education level (year of school).

1.4 Theoretical Framework

This study was guided by select constructs of Fishbein and Ajzen's Reasoned Action Approach (RAA) (Fishbein & Ajzen, 2010). RAA is a psychological theoretical model on behavior change that has been used to identify factors underlying people's behavioral decisions inside and outside of health. Some of these are consumer behaviors and marketing, career

choices, political behaviors, and worksite wellness (McEachan et al., 2016; Sheats, Middlestadt, Ona, Juarez, & Kolbe, 2013). RAA is the most recent iteration of the Theory of Planned Behavior (TPB), the Theory of Reasoned Action (TRA) and the Integrative Model (IM) (Fishbein & Ajzen, 2010; Middlestadt, Sheats, Geshnizjani, Sullivan, & Arvin, 2011; Sheats et al., 2013). According to this theory, intention (the likelihood of performing a behavior) is the most immediate predictor of behavior. Furthermore, intention is determined by three direct constructs (1) attitudes towards the behavior (favorable or unfavorable opinions of the behavior), (2) perceived norms (societal perception of the behavior) and (3) perceived behavioral control (perception of one's control over the behavior) (Fishbein & Ajzen, 2010; Sheats et al., 2013). RAA also posits that other indirect determinants (behaviors beliefs, normative beliefs, control beliefs) and background variables (individual, social, information) may also influence behavioral intention directly or indirectly through the three global constructs (Dayer, 2013; Fishbein & Azjen, 2010; Middlestadt et al., 2011).

This study applied select constructs from RAA to understand and predict clinical medical and nursing students' intention to choose a specialty in geriatric medicine and geriatric nursing, respectfully. Specifically, the study explored the direct and indirect association between intention, a main construct of RAA, and the following selected individual, information and social background variables: (1) attitudes (2) past experiences (3) mentoring opportunities (4) personal interest and (5) students' demographics. A specific schematic presentation and detailed explanation of the theory's application in this study are discussed in chapter 2. RAA was the preferred conceptual framework for this study as it has been successfully applied in the prediction of human engagement in various kinds of behaviors, among diverse population, and in different geographic locations (Dayer, 2013; Fishbein & Ajzen, 2010; Van Hulst & Posthumus,

2016; McEachan et al., 2016). RAA has also been used to guide the development of effective interventions to improve the populations' health and well-being (Middlestadt et al., 2011).

Although RAA has not been used to study career choices among this specific population of interest, medical and nursing students in Ghana, the previous versions of the theory, TPB and TRA were used in predicting some behaviors among different sub-populations in Ghana. Examples of such studies are: condom use intentions of university students (Bosompra, 2001), religion and women's health (Takyi, 2003), understanding emergency contraception practice (Creanga, 2009), behavioral indicators of household decision-making (Tagoe & Abakah, 2014), and evaluation of a Ghanaian school-based and peer-led sexual education program (Krugu, Mevissen, Breukelen, & Ruiter, 2018).

1.5 Relevance of the Study

This study has implications for strengthening the workforce in the health sector and the overall health and well-being of older persons in Ghana. Some unique contributions of this study include (1) the first study to examine factors that predict clinical medical and nursing students' intentions and interest towards a career in geriatrics in Ghana using the RAA as the guiding theoretical framework, and (2) one of the few available studies to examine behavioral or career intentions by focusing on the RAA's background factors (individual, social and information) rather than the three global constructs (attitudes towards the behavior, perceived norm, and perceived behavioral control). Additionally, the study will be relevant in the development of policies and evidence-based interventions geared towards increasing geriatric-oriented physicians and nurses. Further, the results will contribute to the scarce body of literature on geriatrics workforce recruitment and aging related research in Ghana. It can also be used to develop a longitudinal study to more clearly understand the factors influencing students' geriatric

career patterns. On a broader scale, the results gained can guide organizations and governments interested in increasing the number of geriatric nurses and physicians in Ghana and other African countries.

1.6 Scope and Limitations of Study

This study was limited to clinical medical and nursing students at the Kwame Nkrumah University of Science and Technology (KNUST), in the Ashanti region of Ghana. Therefore, the results may not be generalizable to all medical and nursing students in Ghana. Also, though all clinical students at KNUST have access to the internet, a possibility exists of having coverage and selection biases occurring in this study. Since a convenience sampling method is utilized, the overrepresentation or underrepresentation of a particular year group or cohort of students is possible depending on the accessibility and/or availability of the students. Making inferences from such survey results could be problematic as the respondents may not provide an accurate representation of the elements in the sampling frame or even the target population. Additionally, the cross-sectional nature of this study limits the ability to establish cause and effect relationship(s) between intention and any of the predictors.

Another possible limitation was the use of a modified instrument. Due to limited time and resources, piloting the modified instrument was not feasible. Piloting could help in identifying and addressing some of the problems associated with instrumentation up front (Engel & Schutt, 2013). Though the modification was done through expert consultation, challenges with construct and content validity are still possible. For this reason, the interpretation and application of findings were executed with caution.

1.7 Definition of Terms

***1.8.1 Geriatrics*:** The term geriatrics refers to a healthcare specialty which focuses exclusively on providing high-quality and person-centered care for older persons (American Geriatric Society [AGS], 2019). Geriatrics, conceived in the 1940s, involves preventing, diagnosing, and treating health and chronic problems that occur among older persons as they age (AGS, 2019; Leipzig et al., 2014). No defined aged at which a person must seek geriatric care has been established. However, most people do not seek this specialty care until around age 70 years in western countries, when considerable impairment or frailty exists in the individual's health (AGS, 2019).

1.8.2 Geriatrics healthcare professionals: Geriatric healthcare providers include physicians, nurses, social workers and care managers, pharmacists, physical therapists, and nutritionists (AGS, 2019; Leipzig et al., 2014). Health and related professionals can specialize in geriatrics by taking an advanced training or certification in addition to the professional training in their respective fields. The geriatric specialist can work independently or collaborate with another to ensure that their patients receive the ultimate quality of care (AGS, 2019).

1.8.3 Geriatrician: A geriatrician is an internal or family medicine physician who has specialized in and is knowledgeable of the health concerns and issues peculiar to older persons (AGS, 2019). Geriatricians usually collaborate with interdisciplinary teams to synchronize care and treatment for their patients and their caregivers (AGS, 2019). The professional practice of geriatricians is not restricted to the hospitals. A geriatrician can engage in private practice, group practice, work in long-term facilities, post—acute facilities, research centers, etc (AGS, 2019). Older people who receive care from a geriatrician are known to do better at maintaining their ability to engage in normal activities and spend less time in hospitals and nursing homes (Bates, Kottek, & Spetz, 2019).

1.8.4 Older persons /older adults/older people: Even though no global agreement exists regarding the age a person becomes old, older adult, in most western countries refers to a person aged 65 years or more (Kowal & Dowd, 2001; Orimo et al., 2006). Ghana and most developing countries, however, conform to the United Nations' agreed cutoff, which is age 60 and above (Kowal & Dowd, 2001). In this study, the terms older persons, older adults and older people were used interchangeably in reference to persons aged 60 years or older.

1.8.5 Ghana Health Services: Ghana Health Services (GHS) is an autonomous public agency that coordinates and implements national policies under the Ministry of Health (GHS, 2017). The functions of GHS include: (1) developing appropriate strategies and setting technical guidelines to achieve national policy goals/objectives, (2) undertaking management and administration of the overall health resources within the service, (3) promoting healthy modes of living and good health habits by people, (4) establishing effective mechanisms for disease surveillance, prevention and control, (5) determining charges for health services with the approval of the Minister of Health, (6) providing in-service training and continuing education, and, (7) performing any other functions relevant to the promotion, protection and restoration of health. GHS has primary responsibility for the healthcare needs of all citizens. However, social and economic issues related to the aging population are coordinated by the Ministry for Gender, Children and Social Protection in collaboration with private agencies and organizations.

1.8 Abbreviations

GHS	-	Ghana Health Services
GLSS	-	Ghana Living Standards Survey
KBTH	-	Korle Bu Teaching Hospital
KNUST	-	Kwame Nkrumah University of Science and Technology
IRB	-	Institutional Review Board
NHIS	-	National Health Insurance Scheme
SAGE	-	Study on *global AGEing and adult health*
SNNIT	-	Social Security and National Insurance Trust
SMS	-	School of Medical Sciences
SPSS	-	Statistical Package for the Social Sciences
RAA	-	Reasoned Action Approach
UCLA-GA	-	University of California Los Angeles Geriatric Attitude (scale)
UN	-	United Nations
WHO	-	World Health Organization

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The population of older persons is increasing world-wide. Although the rate of increase varies across continents, all regions in the world are experiencing some level of demographic change (Beard et al., 2016). The population of older persons in Africa is said to be one of the fastest growing (Apt, 2012; UN, 2017a). Although the current percentage of the population of older adults is one of the lowest in the world, the actual numbers are increasing (Kpessa-Whyte, 2018; UN, 2017a). In 2005, 34 million people aged 60 years and above lived in sub-Saharan Africa. This number has increased and is projected to reach 67 million by 2030 (Tawiah, 2011). The continent's medium age, which was 18.6 years in 2010, is also anticipated to increase by 46% to 27.2 years by 2050 (Tawiah, 2011). In West Africa, Ghana's population of older persons is counted as one of the largest (Aikins & Apt, 2016; Kpessa-Whyte, 2018). The increase in the population of older adults has been attributed to improvements in life expectancy along with declines in fertility and mortality rates (Aikins & Apt, 2016; Kpessa-Whyte, 2018; Mba, 2010).

Though the transformation in life expectancy is worth celebrating, social, economic, and health challenges accompany the demographic shift (Kinesella, 2000). As noted by the UN (2016), global aging is assured to become one of the most preeminent societal transformations in the twenty-first century, with complications affecting all aspects of society. One such aspect anticipated to impact the Ghanaian society is the changes in health service demands and the availability of a specialized health workforce to meet those demands (Aikins & Apt, 2016; Kpessa-Whyte, 2018). Unfortunately, a shortage of geriatric-specialized health care providers exists, specially nurses and physicians who provide care and manage the chronic diseases that are increasing as the population ages. In Ghana today, the exact number of practicing geriatric specialized health care providers is unknown (Dovie, 2019; Essuman et al., 2019). Moreover,

interest in geriatrics, intentions towards the specialty and factors influencing medical and nursing students geriatric career decisions have not been researched. In order to prepare for the demographic shift, accommodate the health needs, and improve the quality of life of the aging population, the country has to establish the current intentions of students under training in order to predict the likelihood of them pursuing a career in geriatrics in the future.

2.2 Aging and Health Issues in Ghana

For decades, Ghana has been combating challenges related to education, health, poverty and employment (Agyei-Mensah & Akins, 2010; Ayernor, 2012). Regarding health and disease, the country has experienced some significant epidemiological changes over time. During the colonial era, the main causes of morbidity and mortality in Ghana were infectious diseases (Agyei-Mensah & Akins, 2010). This then transitioned to chronic diseases as modernization and access to healthcare improved overall population health (Agyemang et al., 2012; Agyei-Mensah & Akins, 2010; Opoku, Busse & Quentin, 2019). Despite some progress, older persons in the country continue to experience poor health from conditions related to diabetes, heart diseases, hypertension, stroke, malignant neoplasm and trachoma (Agyemang et al., 2012; Opoku et al., 2019; Tawiah, 2011). Of note, wealthy communities in Ghana experience higher risk of chronic diseases, whereas poor communities experience higher risk of infectious diseases and a double burden of chronic diseases (Agyemang et al., 2012; Agyei-Mensah & Akins, 2010; Ofori-Asenso & Garcia, 2016).

Unfortunately, the older population in the country is the most vulnerable to these chronic and infectious conditions (Ayernor, 2012; Dovie, 2019; Kpessa-Whyte, 2018; Tawiah, 2011; Van Der Wielen, Channon & Falkingham, 2018). The 2005-2006 Ghana Living Standards Survey 5 (GLSS 5) showed that one of every three older persons in Ghana suffered from some

kind of illness or injury (Tawiah, 2011). Specifically, illness in old age was prevalent among women whereas injuries in old age were prevalent among men (Tawiah, 2011). Ayernor (2012) in his study *"Diseases of Aging in Ghana"* also affirmed the following conditions among older persons in the country. From the findings involving 507 older citizens aged 50 and above across Ghana, 45% had oral health problems, 33% were hypertensive, 14% had arthritis; 7% had been diagnosed with diabetes, 6% had a cardiovascular condition (Angina) and 4.9% were receiving treatment for stroke or had been diagnosed with stroke (Ayernor, 2012).

WHO's Study on *global AGEing and adult health (SAGE) Wave 1* reported that 2 in every 5 older persons in Ghana have one or more deficiencies in activities of daily living, and 1 in 5 have deficiencies in instrumental activities of daily living (Biritwum et al., 2013; Essuman et al., 2019). This study additionally reported a high prevalence of one or more chronic medical conditions such as: hypertension, depression, diabetes, anemia, and coronary artery disease among older persons aged 60 years and over (Biritwum et al., 2013; Essuman et al., 2019). Further, findings confirmed substantial prevalence of geriatric-specific conditions such as falls and mobility issues, urinary incontinence, and dementia reported among older persons (Biritwum et al., 2013). In addition to these persisting conditions, aging in Ghana has been associated with higher mental health risk as a result of urbanization, social isolation, and limited physical and cognitive activities among older persons (Gyasi, Adam, & Phillips, 2019; Gyasi, Yeboah, Mensah, Ouedraogo, & Addae, 2019; Kobayashi et al., 2019).

2.3 Health Systems and Insurance in Ghana

The health system in Ghana is made up of both private and public sectors (Biritwum et al., 2013; Drislane, Akpalu, & Wegdam, 2014). The public or governmental system is managed by the Ghana Health Services and the following major teaching hospitals: (1) Korle Bu Teaching

Hospital (KBTH), located in the Greater Accra Region of Ghana (2) Komfo Anokye Teaching Hospital (KATH), located in the Ashanti Region of Ghana (3) Cape Coast Teaching Hospital, located in the Central Region of Ghana, and Tamale Teaching Hospital, located in the Northern Region of Ghana (Biritwum et al., 2013; Drislane et al., 2014). These teaching hospitals provide tertiary care for patients as well as training to doctors and related health care providers (Biritwum et al., 2013; Drislane et al., 2014). The private sector, on the other hand, is made up of faith-based and individual for-profit organizations (Biritwum et al., 2013; Drislane et al., 2014). Though Ghana's medical system is heavily concentrated in the larger cities, especially in Accra and Kumasi, a few clinics and community health centers are located in the rural and smaller towns to cater to the health needs of the residents.

Public and private initiatives have been explored to improve the health systems and well-being of the people of Ghana. Nonetheless, no comprehensive formal health insurance or a well-functioning and structured nation-wide social security system is currently in place for older persons in Ghana (Dovie, 2019; Kpessa-Whyte, 2018; Mba, 2010; Van Der Weilen et al., 2018). Contrary to the mandate that all Ghanaians should be part of an insurance scheme, most people (including older persons) are uninsured; no penalty is enforced for lack of compliance (Blanchet, Fink & Osei-Akoto, 2012; Van Der Wielen et al., 2018). Rather, in place is the traditional age old compact extended family system (Alidu, Dakyi & Tsiboe-Darko, 2016; Mba, 2010; Tawiah, 2011). With this extended family system, younger family members are obliged to care for the older members in times of need, including provision of financial, social and health care support for older family members (Alidu et al., 2016; Tawiah, 2011). However, due to economic difficulties, urbanization and migration focus has shifted from the extended family to the nuclear family (Alidu et al., 2016; Kpessa-Whyte, 2018; Tawiah, 2011). This means that persons with no

living children or with poor younger family members who are not capable of caring for them have now become the responsibility of the government and philanthropic organizations (Alidu et al., 2016; Kpessa-Whyte, 2018; Kyei-Arthur, 2017; Tawiah, 2011; Van Der Wielen et al., 2018). One such renowned philanthropic organization is *HelpAge Ghana*, a non-governmental organization that is committed to promoting the well-being and inclusion of the older people in the country (Apt, 1993; Coe, 2018).

2.3.1 The National Health Insurance Scheme (NHIS)

In 2003, the Ghana National Health Insurance Scheme (NHIS) was established as the first nation-wide attempt to provide accessible, affordable and improved health care services to Ghanaian residents through mutual and private health insurance schemes (Alidu et al., 2016; Tawiah, 2011; Van Der Wielen et al., 2018). The NHIS is funded through a combination of government and donor funds. The four main independent funds are:

- National Health Insurance Levy. The National Health Insurance Levy is a 2.5% value added tax on goods and services. It accounts for about 70% of the total revenue for the scheme (Van Der Wielen et al., 2018).
- Contributions to the Social Security and National Insurance Trust (SSNIT). The SSNIT consist of taxes by formal sector workers and their employers during their active working years. This accounts for about 23% of the revenue for NHIS scheme (Blanchet et al., 2012; Van Der Wielen et al., 2018).
- Returns on National Health Insurance Fund investments. This in addition to government and donor funds accounts for about 2% of the total revenue (Blanchet et al., 2012; Van Der Wielen et al., 2018).

- Premium fees. This is the annual contributions made by all NHIS scheme benefactors unless exempted from premium payment. Persons who are SSNIT pensioners or aged 70 years and over and are resident in Ghana are exempted from payment of premiums under the Community Mutual Health Insurance Scheme. This accounts for about 5% of the total revenue (Alidu et al., 2016; Tawiah, 2011; Van Der Wielen et al., 2018).

Enrollment in the NHIS is not automated for older persons aged 70 years and above. They must register in order to be covered under the scheme (Tawiah, 2011; Van Der Wielen et al., 2018). Also noteworthy, although the official retirement age in Ghana begins at age 60 years, the population of older persons (60 years to 69) who were not contributors to the SSNIT during their working years do not qualify for the free coverage or benefits. These persons are expected to pay out-of-pocket for the annual premium which is deemed high by retirees with inadequate financial resources (Tawiah, 2011). Failure to be covered under the NHIS or any other health insurance scheme will mean paying out-of-pocket for all health and related expenses (Alidu et al., 2016; Tawiah, 2011, Van Der Wielen et al., 2018). The NHIS package covers about 95% of common healthcare cases including inpatient services, outpatient services, oral health, eye care, maternity care, and emergency care (Van Der Wielen et al., 2018). Expensive and specialty care such as cancer (except breast and cervical), organ transplant, and psychiatric services (except mental disorder treatment) are not covered under the NHIS scheme (Blanchet et al., 2012; Dalinjong, Wang & Homer, 2018)

In 2006, three years after the commencement of NHIS when GLSS 5 was conducted, only 20% of the older residents aged 70 years or above were covered under the scheme (Tawiah, 2011). Regarding health expense coverage after seeking care, 89.2% of older males in Ghana reported paying for their own medical bills, compared to 67.6% of older females (Tawiah, 2011).

Interestingly, 20.6% of the medical bills of older females were covered by relatives compared to 8.4% of the medical bills of older males (Tawiah, 2011). For those with health insurance, 8.4% of medical bills for older females and 5.8% for older males were covered by the scheme (Tawiah, 2011). The poor financial position and higher unemployment rates for older females may have accounted for the relatively higher financial support they receive to cover their medical expenses (Awoonor-Williams et al., 2013; Dalinjong et al., 2018; Tawiah, 2011).

A more recent review of the GLSS 2012 to 2013 version showed an increase in NHIS enrollment; 58% of older persons aged 50 years and above had coverage (Van Der Wielen et al., 2018). Twenty percent of NHIS insured older members reported consulting a health professional in the past two weeks compared to 10% of the uninsured older persons. Moreover, overnight hospitalization included 13% of the older insured members compared to 6% of non-members (Van Der Wielen et al., 2018). These results show some improvement in hospital utilization among health-insured older persons. However, inequity still exists among the uninsured, the poor and rural older populace in Ghana (Van Der Wielen et al., 2018).

2.4 Overview of Medical and Nursing Schools in Ghana

2.4.1 Medical schools and training

Ghana has seven accredited medical schools: two private and five government-owned or public institutions. The public institutions include: (1) the University of Ghana (UG) Medical School, established in 1962, the oldest and largest medical school in the country, located in Accra, Greater Accra Region, (2) The School of Medical Sciences at the Kwame Nkrumah University of Science and Technology established in 1975, the second largest medical school in the country, located in Kumasi, Ashanti Region, (3) the School of Medicine at the University of Development Studies established in 2006 located in Tamale, Northern Region, (4) the University

of Cape Coast's School of Medical Sciences established in 2009 and located in Cape Coast, Central Region, and (5) the University of Allied Health Sciences (UAHS) established in 2012 and located in Ho, Volta Region. The two accredited private institutions are: (1) Family Health Medical School established in 1997 in Accra, Greater Accra Region, and (2) Accra College of Medicine established in 2013, also located in Accra, Greater Accra Region. All, of the medical schools in Ghana are concentrated in larger cities where the affiliated teaching hospitals are also located (Drislane et al., 2014).

Medical school accreditation in Ghana is offered by the National Accreditation Board under the administration of the Ministry of Education in Ghana. Though each medical school may have a slightly different focus in terms of electives and sub-specialties introduced to students, a medical school education in Ghana typically lasts for six years based on the British school system (University of Ghana [UG], 2014). After the first three years, the pre-clinical phase of medical school education, a student is awarded a Bachelor of Science in Human Biology or related science degree (UAHS), 2019). They are then introduced to clinical/hands-on practical training for the remaining years in their affiliated hospitals after which they can receive a Bachelor of Surgery and Bachelor of Medicine (MB ChB) or equivalent medical doctor degree offered by the specific institution (Family Health Limited, 2019; UAHS, 2019). Upon attaining the MB ChB degree, Ghanaian medical students are required to have a two-year supervised clinical experience (house job) before they can start their own practice (Eliason, Tuoyire, Awusi-Nti, & Bockarie, 2014; Gyedu et al., 2019).

Though students are introduced to clinical specialties during the later three years of their medical school education, they may choose to consider a graduate education (e.g., Ph.D, master's degree) or continue to practice as a primary physician after their house job (Gyedu et

al., 2019; UAHS, 2019). It is also at the stage after the house job that the country loses about 60% of its graduates to migration, mostly to the United Kingdom and the United States (Eliason et al., 2014; Gyedu et al., 2019). Pursuing some medical specialties from the *West African and Ghana College of Physicians and Surgeons* may require additional work experience after the house job (Gyedu et al., 2019).

2.4.2 Nursing schools and training

Two primary nursing education programs are provided in Ghana - diploma and baccalaureate programs (Boso & Gross, 2015; Talley, 2006). The diploma in nursing, also known as general nursing, is the most common and traditional nursing education offered by both public and several private institutions (Talley, 2006). Nursing training usually lasts for three years with much emphasis on clinical exposure and patient-centered training (Opare & Mill, 2000). The bachelor's degree in nursing, on the other hand, is an upgrade and offered mostly by four-year colleges/university institutions. This four-year education offers students the training diploma nurses received in addition to a practice-based research component (Opare & Mill, 2000).

Bachelor's degree-seeking nursing students may also have the opportunity to choose electives or majors based on their interest and the variety of programs offered by their institution. For example, students can focus on community health nursing, emergency nursing, maternal and child health nursing, research, education and administration nursing, pediatric nursing or adult health nursing if offered by the institution. All five public medical institutions mentioned above offer nursing and midwifery programs with a slight variation in their focus. However, only the University of Ghana College of Nursing and Midwifery currently offers adult health nursing in both the undergraduate and graduate levels in the country (UG, 2019a). Graduate programs in

nursing (e.g. Master of Philosophy [MPhil] and Master of Science [MSc]) may be available in some public institutions (UG, 2019b).

In addition to these two main nursing programs are community health nurses who are specifically trained (for a shorter period) to provide public health services and education to residents in rural and under-served communities (Opare & Mill, 2000). As physicians and skilled nurses refuse to reside and provide services in the disadvantaged communities due to limited infrastructure and resources, these community nurses sometimes turn out to be the main and only primary health care providers for the residents which comprise a large proportion of older adults (Ayernor, 2012; Drislane et al., 2014; Essuman et al., 2019). Over 51% of older adults in Ghana reside in rural and remote communities (Adinkrah, 2018; Aikins & Apt, 2016; Coe, 2018; Van Der Wielen et al., 2018).

2.5 Geriatric Specialized Care, Research and Education in Ghana

Predictions about the demographic transitioning and its implications, socioeconomic consequences and potential health service demands were made decades before the physical evidence emerged in the late 1900's into the early 2000's in Ghana (Aikins & Apt, 2016; Apt, 1993; Brown, 1984, 1990; Gaisie et al., 1970; Gaisie & de Graft-Johnson, 1976; Mba, 2010). Unfortunately, very limited attention has been accorded the need for geriatric specialized care of older persons and investing in geriatric, focused research and training programs (Aikins & Apt, 2016; Dovie, 2019; Kpessa-Whyte, 2018).

2.5.1 Geriatric specialized health care services

Specialized care for older persons within the health and medical system is strongly recommended in the literature (e.g. Aikins & Apt, 2016; Asiamah & Azinga, 2017; Dotchin, et al., 2012; WHO, 2014). In Ghana, however, no country-wide systematic health delivery strategy

exists for older persons (Essuman et al., 2019). Though Korle-Bu Teaching Hospital (KBTH) provides geriatric clinic services to older persons once a week (on Wednesdays), no dedicated facility or assigned department for geriatrics exist in this hospital. Geriatric services are provided as part of their polyclinic/family medicine services (KBTH, 2019).

On the national level, the number and proportion of health care facilities, if any, providing geriatric specialized care to older persons is unknown (Biritwum et al., 2013; Dotchin, et al., 2012; Dovie, 2019; Essuman, 2016). Medical care, both primary and tertiary for older persons, is provided by general practitioners who may or may not have received geriatric focused training (Dotchin, et al., 2012; Drislane et al., 2014; Essuman et al., 2019). Regrettably, in the general hospitals where all citizens seek health care, limited resources are available to manage health and physical well-being challenges for older people such as falls, mobility problems, and cognitive impairment (Essuman et al., 2019). With almost no long-term rehabilitation and hospice facilities in the country, family caregiving is the most common type of care older people depend on during their chronically ill and fragile years (Aikins & Apt, 2016; Kyei-Arthur, 2017).

2.5.2 Geriatric education: The first geriatric fellowship program in Ghana

Until 2016, no in-country educational or training program was dedicated to training doctors desiring to specialize in geriatrics or geriatric medicine in Ghana (Essuman, 2016, Essuman et al., 2019). Neither is a nation-wide geriatric-focused curriculum incorporated in the medical school education. The first geriatric training fellowship in Ghana is a collaborative initiative between the Ghana College of Physicians and Surgeons in Ghana and the Department of Family Medicine at the University of Michigan in the United States (Essuman, 2016; Essuman et al., 2019). This evidence-based geriatric training is offered as a sub-specialty at the Family Health Department of the Ghana College of Physicians Fellowship program in the capital city of

the country, Accra (Essuman, 2016; Essuman et al., 2019). Considering that no geriatricians or geriatric-trained faculties currently exist in Ghana to teach new fellows, tutoring/mentoring will be done by senior faculty from the Family Medicine Department with training support from the University of Michigan (Essuman et al., 2019). Apart from the adult health nursing program advertised on the University of Ghana's website (UG, 2019a), as best as can be determined, no other initiative, or a nation-wide geriatric specialty training program exists for nurses and affiliate health professionals desiring to specialize or even learn more about the field.

2.5.3 Geriatric research in Ghana

The scope and trajectory of empirical studies on geriatrics in Ghana have been limited as aging-related research in the country mostly started in the last two decades (Aikins & Apt, 2016; Essuman et al., 2019; Kpessa-Whyte, 2018). To date, aging-related research in Ghana has focused on demographic profiles and patterns of aging, health status of older persons, older persons care and support systems, roles and responsibility of the aged, social representation of older persons, and issues relating to their socioeconomic status (Aikins & Apt, 2016; Kpessa-Whyte, 2018). The most comprehensive population-based study on older persons in Ghana is WHO's *SAGE Wave 1* led by Biritwum and colleagues (2013). Related to this is the *"Ghana Country Assessment Report on Ageing and Health"* also conducted by the WHO (2014).

2.6 Geriatric Specialization Consideration: Medical and Nursing Students

Though studies on geriatric specialty consideration and factors influencing their career preferences have not been conducted in Ghana, they have been explored in some African nations (e.g Fajemilehin, 2004, from Nigeria) and studied at length in other developed countries across the globe (e.g. Chua, Tan, Merchant & Soiza, 2008 from Singapore; Curran et al., 2015 from the USA; Pokrzywko et al., 2019 from Canada; Türgay et al., 2015 from Turkey, and Wang et al.,

2009 from Taiwan). Some of the most common characteristics reported in studies investigating medical and nursing students' willingness to consider a career in geriatrics are summarized below.

Attitudes towards older persons. Many studies focusing on attitudes among medical students before the year 2000 reported mostly indifferent and negative attitudes towards older persons and their consideration of a geriatric specialty (e.g. Brooks, 1993; Coccaro & Miles, 1984; Duerson, Thomas, Chang, & Stevens, 1992; Green, Keith, & Pawlson, 1983; Reuben, Fullerton, Tschann, & Croughan-Minihane, 1995; Warren, Painter, & Rudisill, 1983). Negative attitudes were attributed to stereotypes and beliefs that diseases related to older persons are chronic and untreatable, and that, it is a waste of resources to intervene during the later years as the health of older persons will naturally decline (Duerson et al., 1992; Reuben et al., 1995). Interestingly, a shift towards positive attitudes seems to have materialized in recent years. For example, Chua and colleague in their 2008 study of first year medical students in Singapore found strong associations between attitude scores and willingness to consider a career in geriatrics ($R = 0.48$, $p < .001$). They also found positive attitudes among students, though only one in three students were willing to pursue the career. Overall, only 6.6% of their participants reported having negative attitudes (Chua et al., 2008). A similar result was found in a pilot study by Hughes et al. (2008) among first and fourth year students at the University of Aberdeen. From their study, positive attitudes were the main independent factor associated with willingness to consider a career in geriatric medicine (Hughes et al., 2008).

Other studies have also found positive attitudes to be associated with willingness to consider a career in geriatrics (geriatric medicine, geriatric psychiatry, or geriatric research) (Fitzgerald et al., 2003; Kishimoto, Nagoshi, Williams, Masaki & Blanchette, 2005; Voogt,

Mickus, Santiago & Herman, 2008; Wang et. al., 2009). Though the shift in medical students' attitudes requires further exploration, a potential explanation for some of the reported findings could be that medical students in recent years have an earlier exposure and better awareness of the needs of older persons in their societies (Chua et al., 2008). Nonetheless, these findings should be interpreted and/or generalized with caution as most of these studies were conducted in developed and industrialized countries.

Attitudes of nursing students towards older persons have also been explored at length, though mostly in developed countries. The literature seems to have no clear pattern of either extensive negative or positive attitudes (Liu, Norman & While, 2013). For example, Ball (1999) reported positive attitudes among University of Massachusetts undergraduate students in the nursing major program regardless of their individual characteristics. Likewise, Hweidi and Al-Obeisat (2006) reported positive attitudes among Jordanian nursing students, but with a strong correlation between students' attitudes and their socio-economic status. In addition, they found that students who exhibited positive attitudes were also likely to pursue a career in geriatrics after graduation (Hweidi & Al-Obeisat, 2006). Adding to the positive attitude findings are Gallagher, Bennett and Halford (2006) from the United Kingdom, Myers, Nikiletti and Hill (2001) from Australia, Pan, Edwards and Chang (2009) from Taiwan, Türgay et al. (2014) from Turkey, and Wu (2011) from China. Neutral attitudes have also been reported by Chen and Walsh (2009) from Taiwan, and Erdemir et al. (2011) from Turkey. An international systematic review of both registered nurses and nursing students by Liu et al. (2013), however, found contrary negative findings and added that nursing students' attitudes towards older persons have been less positive since the year 2000. Willingness to pursue a career related to older persons was, nevertheless, associated with positive attitudes, which is consistent with the current

literature (Liu et al., 2013). The variation in attitudes observed by different researchers from different countries could be reflective of the different policies that are not supportive of older persons within various nations (Liu et al., 2013).

***Characteristics of students (age, gender, educational level)*:** Research findings on students' characteristics such as age and gender, and their consideration of a geriatric career have been inconsistent and sometimes dependent on another factor such as attitudes or interest (Chua et al., 2008; Liu et al., 2013). For nursing students, Söderhamn, Lindencrona, and Gustavsson (2001) found an association between age and gender with attitudes and consideration of a career in geriatrics. Findings from their study indicated that females and students aged 25 years or more were more likely to exhibit positive attitudes (Söderhamn et al., 2001). Hweidi and Al-Obeisat (2006), as well as Türgay et al. (2014) also found that female nursing students were more likely to pursue a career in geriatrics than male students, but with no association with age or education level. In contrast, Karlin, Emick, Mehls, and Murry (2006) found education level to be a significant predictor of consideration for a career in geriatrics, but found no association for gender or age. Ball (1999) and Sheffler (1998), on the other hand, found no association between any of these factors and nursing students' attitudes, interest or geriatric career consideration.

For medical students, no association was found with age, however, gender and education level were found to be significant (e.g. Chua et al., 2008; Hughes et al., 2008; Wang et al., 2009). Female medical students were more likely to consider a career in geriatrics than male medical students (Chua et al., 2008; Hughes et al., 2008; Wang et al., 2009). A potential reason suggested by Chua and colleagues was that male medical students indicated that they perceive "working with older patients to be too slow-paced and demanded carefully listening, monitoring and managing chronic diseases as opposed to high-tech sexy or dramatic intervention" (p. 950).

For education level, a longitudinal study by Diachun, Hillier, and Stolee, (2006) in Canada reported that, students' levels of interests and geriatric career consideration indicated while in their first year of medical school diminished in their second year. In Hughes et al. (2008) and Wang et al. (2009), where first and fourth-year medical students were compared, first year medical students' willingness to consider a career in geriatrics was greater than fourth year students. It is believed that, students start medical school with relatively positive attitudes which diminish later in medical school due to reinforcement of negative stereotypes and the low priority of geriatrics (Chua et al., 2008; Kishimoto et al., 2005). The inconsistent findings on students' characteristics could be ascribed to the different methodological and assessment approaches used by researchers (Liu et al., 2013; McDermutt & Zimmerman, 2005). In spite of these differences in approach, none of the authors referenced above reported an association between geriatrics career consideration and race or ethnicity among either nursing or medical students.

Interest in geriatrics. Interest in pursuing a specialty related to geriatrics is low among both nursing and medical students across all years, gender, and programs (Bagri & Tiberius, 2010; Bleijenberg, 2012; Chua et al., 2008; Voogt et al., 2008; Wang et al., 2009; Williams, Nowak & Scobee, 2006). Some reported reasons accounting for low interest among both medical and nursing students include limited knowledge concerning aging and older persons , stereotypes about older persons , patients' responsibility and the role of health providers in the provision of care, the overwhelming nature of managing geriatric patients and the unrealistic expectations of their families, lack of pre-clinical and clinical exposure to geriatrics, lack of appreciation for the complexity, challenge, and rewards of a geriatric career, managing the emotional burden of caring for older patients, and lack of prestige and limited financial rewards (Bagri & Tiberius, 2010; Bleijenberg, 2012; Diachun et al., 2008; Fitzgerald et al., 2003; Jeste et

al., 2018; Söderhamn et al., 2001). In Chua et al. (2008), though interest to pursue the specialty was low among all students, 41.8% (102 out of 244) of the participants were undecided (neutral interest) about pursuing a career in geriatrics. This circumstance gives educators the opportunity to intervene and nurture or kindle potential interest among undecided students.

Interventions/educational programs: It has been conjectured that providing students with an early exposure to knowledge about aging and geriatrics, interaction with practicing geriatricians (mentorship), and a relationship with a healthy older person would improve students' attitudes and consideration for a specialty in geriatrics (Alford, Miles, Palmer & Espino, 2001; Chua et al., 2008; Pokrzywko et al., 2019). However, not all programs and interventions offered to students have validated this argument. Alford et al. (2001) conducted a study with 204 second and third year medical students assigned to a new educational program. Their results showed a significant attitudinal impact on the intervention group as a result of the new educational program but, no changes were detected to their consideration for a career in geriatrics (Alford et al., 2001). Lu et al. (2010) also offered a program titled, *Senior Teacher Education Partnership (STEP)* program that partnered first year medical students with community-dwelling older persons. After the program, findings indicated no change in knowledge and geriatric consideration; nevertheless, the STEP program positively impacted their beliefs about older persons to be ''independent,'' ''active,'' ''positive,'' and ''involved'' (Lu et al., 2010, p.697).

Studies that have indicated a significant association between their intervention or educational program and students' consideration of a career in geriatrics include (1) a 10-week summer mentorship program for first year medical students by Curran et al. (2015), (2) a 6-week teaching module for graduating medical students provided by Ní Chróinín et al. (2013), (3) an

integration of a long-term care experience into senior year community health practicums for nursing students by Williams et al. (2006), (4) clinical placement in a nursing home for bachelor of nursing students by Sheffler (1998), and (5) a 16-week clerkship and field exposure for first year medical students by Pokrzywko et al. (2019).

Past experiences with older persons: No universal definition for past experiences with older persons exists. However, researchers have explored different aspects such as students' consideration of a career in geriatrics and prior encounters living with or interacting with older persons , including family and non-family members (Fitzgerald et al., 2003; Türgay et al., 2014), working professionally with older persons , that is providing care or treatment (Curran et al., 2015; Diachun et al., 2006; Türgay et al., 2014) and being taken care of by an older person, as a guardian (Wu, 2011). Past experiences living with or working at a unit offering care to an older person was related to positive attitudes and willingness to consider a career in geriatrics for nursing students in Turkey (Türgay et al., 2014). Curran et al. (2015), Fitzgerald et al. (2003), and Schigelone and Ingersoll-Dayton (2004) found similar results for a sample of medical students in the United States. Wu (2011) also studied the impact of being taken care of by an older person and students' attitudes towards older persons in China and found a positive correlation between the two factors. Söderhamn et al. (2001) likewise indicated an association between previously caring for an older person and positive attitude towards geriatric care among nursing students' in Sweden. However, though both studies (Söderhamn et al., 2001 and Wu, 2011) asserted past experiences to be very important, they did not make any direct connection between students' past experiences with older persons and their geriatric career consideration.

Interestingly, studies such as Pan et al. (2009) from Taiwan for nursing students, Chua, Tan, Merchant, and Soiza (2008) from Singapore for medical students, and Diachun et al. (2006)

from Canada found no significant association between students' past experiences and their consideration of a career in geriatrics. Differences in cultural norms and practices, the diversity in the types of past experiences with older persons, the quality of the past experience, the duration of the experience, and the unique impact the experience had on the student can collectively or separately influence their attitudes, interest, and consideration of a specialty in geriatrics(Liu et al., 2013; McDermutt & Zimmerman, 2005; Schigelone & Ingersoll-Dayton, 2004). These variables may have accounted for the differences in findings from researchers in various parts of the world.

2.6.1 Geriatrics specialization in Africa: The case of Nigeria

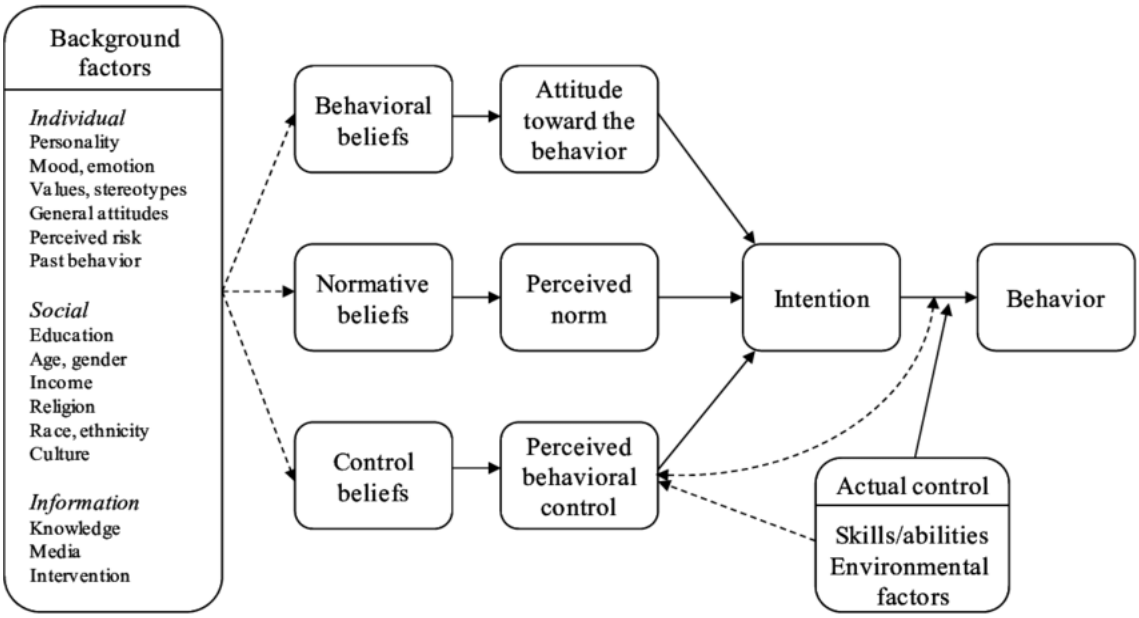
Fajemilehin (2004) conducted a descriptive study among both medical and nursing students in Ile-Ife, Nigeria, and found poor knowledge about aging among the students, a high reluctance to specialize in geriatrics or gerontology, and misconceptions about older adults. Further, nursing students demonstrated better knowledge and attitudes than medical students. The reason given by the author was that, in Nigeria, nursing students are more exposed to the aged and caring for them in both the community and hospital settings during and after their clinical education (Fajemilehin, 2004). Considering that almost no studies on geriatric specialization have been conducted in Africa, Fajemilehin's (2004) study is very useful as a snapshot of students in health professions and their attitudes towards older persons and careers related to caring for older persons in a West African country. These findings further present a legitimate assumption that distinctions between research findings from advanced countries and developing countries are likely. However, this comprises only one instance, hence, cannot be generalized for all African or West African countries.

2.7 Theoretical Application: The Reasoned Action Approach

The guiding framework, the Reasoned Action Approach (RAA), has been used to predict both health and non-health related behaviors in diverse populations across the globe (Fishbein & Ajzen, 2010; McEachan et al., 2016). Mention can be made of consumer behaviors in Vietnam (Nguyen, 2012), worksite wellness in the United States (Middestadt et al., 2011), understanding agricultural non-adaptation in Kenya (Van Hulst & Posthumus, 2016), African American vegetable consumption behaviors (Sheats et al., 2013), and gambling behaviors among college students (Dahl, Tagler, & Hohman, 2017). This study applied select background factors of the reasoned action model in examining the geriatric specialty intentions among medical and nursing students. The study did not apply the three universal constructs (attitudes, subjective norms and perceived behavioral control) of the reasoned action model.

In Fishbein and Ajzen's original model (Figure 4), background factors are provided as the origins of the following associated beliefs: behavioral beliefs, normative beliefs and control beliefs (Fishbein & Ajzen, 2010). The factors are grouped under three categories (1) individual (personality, mood, emotions, values, stereotypes, general attitudes perceived risk and past behavior, (2) social (education, age, gender, income, religion, race, ethnicity, and culture), and (3) information (knowledge, media, and intervention). Though the relationship between beliefs and the background factors cannot be clearly defined, Fishbein and Ajzen believe that the relationship is indirect (mediated) as represented with dotted lines in their model (Dayer, 2013; Fishbein & Ajzen, 2010). The reason for the uncertainty of this relationship is that, unlike the three global constructs, background factors are not yet theorized (Fishbein & Ajzen, 2010). Their applicability and selection are, therefore, dependent on the behavioral domain of interest (Fishbein & Ajzen, 2010).

Figure 4: Reasoned action model, Fishbein & Ajzen, 2010, p. 22.



Based on the extant literature on factors influencing students' consideration of a geriatric specialty (e.g., Ball, 1999; Chua et al., 2008; Turgay et al., 2015; Wang et al, 2009), the following relevant background factors (shown in Figure 5) have been selected and operationalized:

- Under the individual factors, "*general attitudes"*, "*personality"* and *"past behavior"* have been operationalized as "*attitudes"*, *"personal interest"* and *"past experiences"* respectively.
- Under the social factors, "*education*" has been specified as "*education level*" but "*age"* and "*gender"* were maintained as presented in the original model.
- Under the information factors "*intervention"* has been specified to measure only one type of intervention, *"mentoring opportunities"*.

Figure 5: Modified reasoned action model: Conceptualizing geriatric specialization in Ghana

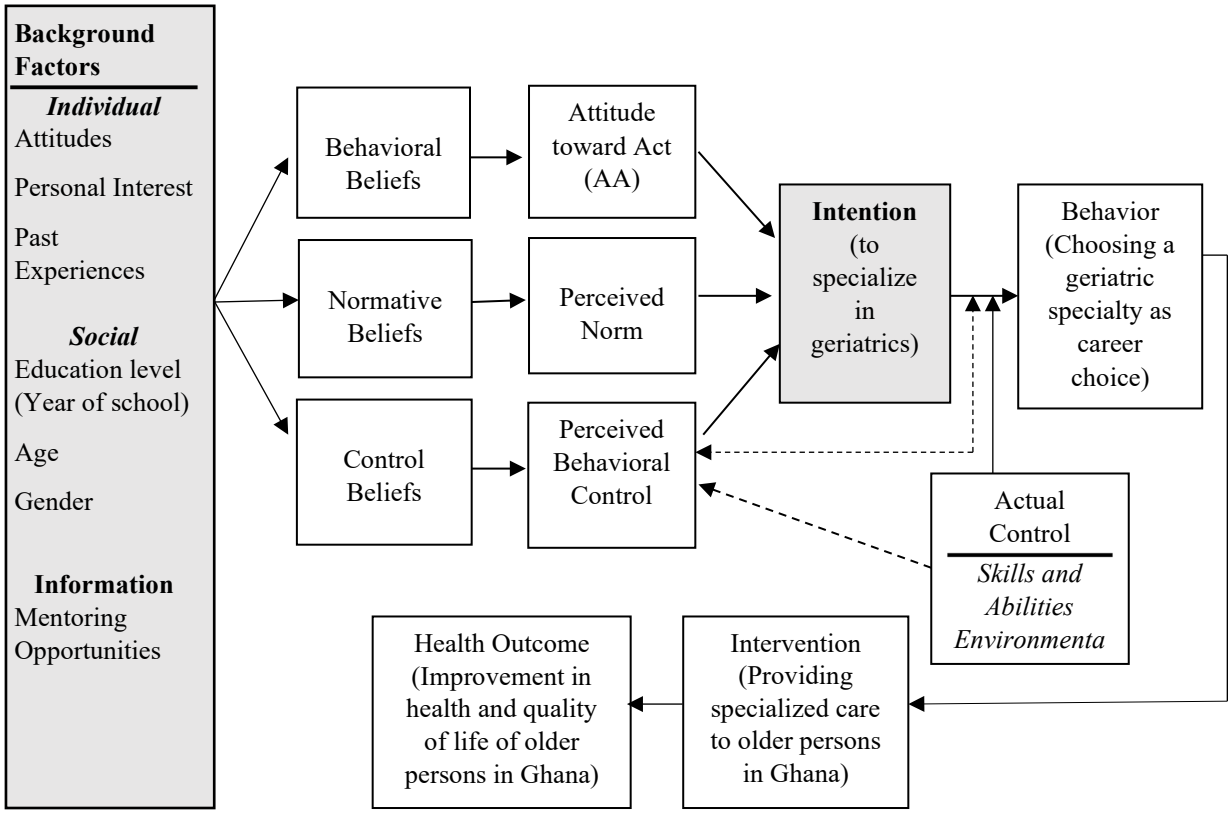


Figure 5 demonstrates the application of RAA in this study and a hypothesized long-term potential impact on the health and well-being of older persons in Ghana. Although not all background factors under the RAA have been explored, studies such as Dayer (2013) have investigated these factors in addition to the three global constructs in order to understand early successional forest habitat management among private landowners in the Southern Tier of New York State. In Dayer's study, landowners' characteristics (organizational affiliation, residence on land and past behavior) and land characteristics (amount of land and land composition) were both explored as background factors. Although no land characteristics had a direct effect on the direct constructs or intention, a direct independent positive relationship was found between past behavior and each of the constructs, including intention (Dayer, 2013). Dahl et al. (2018) in their gambling

study also found past behaviors to be a significant predictor of intention and likelihood on gambling in the future. They furthermore found some association between age, gender and perceived normative pressure, though not as a predictor of intention (Dahl et al., 2018).

As shown in Figure 5, this study posits a direct relationship between background factors and geriatric specialty intentions. This relationship is demonstrated with straight lines in the model rather than the original dotted lines from Fishbein and Ajzen (2010). Further, demonstrated in the diagram is the long-term aspiration of this study, which is the postulation that students' positive geriatric specialty intentions will eventually lead to an engagement in the behavior of interest (i.e., choosing a career in geriatric medicine or nursing). This will then lead to the delivery of an intervention (i.e., provision of specialized care for the aging population), which in turn, will lead to the desired health outcome for older persons in Ghana (i.e., improvement in their health and quality of life). This postulation is made with the assumption that students will have the actual control (i.e., skills, ability and environmental resources) to make that choice.

2.8 Chapter Summary

Multiple topics relevant to medical and nursing students and their consideration for a career in geriatrics were addressed. Specifically, discussion began with an overview and literature review on the health of older persons in Ghana. The chapter also covered the health systems and insurance policies accessible to older persons in the country. Currently, only one country-wide public health insurance scheme exists - the National Health Insurance Scheme (NHIS). Though the scheme is not free for all older persons in the country, persons aged 70 years and over are exempted from paying the annual premium.

Also presented were an overview of medical and nursing school structures and education programs offered in the country, as well as the non-existence of geriatric specialized care and educational programs offered to students in Ghana. As discussed above, until 2016, no geriatric related fellowship existed for physicians interested in the specialty. Moreover, very limited research have focused on geriatric needs and factors influencing students and health providers' interest in the specialty. Thereafter, factors influencing medical and nursing students' consideration for a career in geriatric were investigated. From the literature, the most common factors discussed are attitudes towards older persons, past experiences (living with, caring for, interacting with, working with and being care for by an older person), interest in the specialty, educational intervention programs, and students' demographics; most findings were inconsistent. Conceivably, the inconsistencies in findings are linked to differences in geographical locations, culture and methodological approaches. Discussions concluded with an overview of the guiding theory, the Reason Action Approach (RAA) and its application in this study.

The following chapter, chapter 3 describes the dissertation research design and its appropriateness. The study setting, study participants, the data collection procedures and related statistical analysis and procedures have been presented. Two sub-studies and related research questions are addressed.

CHAPTER 3: RESEARCH METHODS

3.1 Overview

The research design for the dissertation is described hereafter. Specifically addressed are the research questions and hypotheses along with the quantitative approach and analytic strategies for the study, plus study data source. First, the background and motivation for the study are summarized, and the research questions are stated. Next, the design for the study is described. That description encompasses the data collection procedure, sample, and the quantitative approach that were utilized. The overarching aim of the dissertation was to closely examine the intrapersonal and interpersonal factors associated with intention to specialize in geriatric medicine and nursing among clinical medical and nursing students in Ghana. Specifically, this dissertation is sectioned into two sub-studies comprising the following research questions.

Sub-study 1: (a) Is there significant association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a geriatric specialty among clinical medical students in Ghana? (b) Is there significant association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a geriatric specialty among clinical nursing students in Ghana?

Sub-study 2: (a) Do the attitudes of final year clinical medical students toward older persons in Ghana differ from the attitudes of final year clinical nursing students? (b) Is there an association between the quality of students' experiences with older persons and their attitudes toward older persons in Ghana?

3.2 Research Design

The dissertation utilized a cross-sectional approach using data previously collected as part of a Geriatric Specialty Survey of clinical medical and nursing students of the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. Cross-sectional studies provide a snapshot of the participants and the phenomena under study for a given moment in time (Setia, 2016). Data are collected at a single point in time, with no emphasis on the sequence of events (Levin, 2006; Setia, 2016). A cross-sectional research approach was best fit as the purpose of this dissertation did not intend to document the experiences of participants over time. The primary purpose was to capture the specialty intention of participants and examine which factors impact their career specialization or choice within a single timeframe.

A possible alternative to the cross-sectional approach is longitudinal research which involves collecting data from the same participants multiple times over a stated period. This method is common with multi-year studies, and studies that require multiple comparisons of data for the same clients (Coggon, Barker, & Rose, 2003; Glenister et al., 2018). However, considering this study's objective and the logistics available, the longitudinal approach was not the best fit.

3.3 Setting

The Geriatric Specialty Survey was conducted in May 2018 at the Komfo Anokye Teaching Hospital (KATH) in the Ashanti Region of Ghana. KATH is a 1200-bed hospital located in the center of the capital city of the region, Kumasi (KATH, 2019). The hospital takes referrals from 12 out of 16 administrative regions in Ghana (KATH, 2019). It is the only teaching hospital in the Ashanti region and the affiliate hospital for KNUST's School of Medical Sciences (KNUST-SMS). KATH was considered a suitable, safe, and comfortable setting for the

survey as clinical medical and nursing students are housed in student hostels onsite while completing their residency and clinical practice, respectively. This allowed for a much higher chance of reaching more eligible participants during non-working hours in the comfort of their hostels.

3.4 Participants

The survey participants were clinical medical and nursing students from KATH-SMS. The clinical medical students comprise fourth, fifth, and sixth year medical students whereas clinical nursing students are only the fourth year students. The initial proposal was to include all medical and degree nursing students who were 18 years or older at KNUST-SMS. However, after consulting and reviewing the study questionnaire with local experts in Ghana, which included the Dean of KNUST-SMS who is also a faculty member, one practicing physician, and several research consultants at KATH, the following changes were advised: (1) Include fourth to sixth year medical students and final year (fourth year) nursing students only, (2) exclude first to third year medical and nursing students. The reason for this suggestion was that some of the questions demanded prior knowledge and experience with older patients which only students who have begun their clinical rotations or practice are more likely to have acquired. Also, including the first to third year students in this study was not feasible for the researcher, as those students did not reside at KATH like their senior colleagues.

3.5 Sample Size

An estimated 600 clinical medical students and 80 clinical nursing students were invited to voluntarily participate in the Geriatric Specialty Survey; 363 responses (60.5% response rate) from the clinical medical students and 63 (79% response rate) from the clinical nursing students were received. Of those received from the clinical medical students, 264 were considered valid

for analysis based on the degree of completion. The participants were slightly more males (53.4%) and fifth year students (42.4%). The minimum and maximum ages were 18 and 40, respectively, with the mean age of 23.5 (SD = 1.44). For the clinical nursing students, 51 of the surveys received were considered valid for analysis. Concerning the gender distribution of nursing student respondents, slightly more females (54.9%) participated than males. The minimum and maximum ages were 20 and 32, respectively, with a mean age of 23.2 (SD = 3.78). For the purpose of this study, race and ethnicity were not relevant variables. Hence, such questions were not posed to participants. Table 1, below, displays basic descriptive information about the participants.

Table 1: Descriptive Information of Study Participants

Gender		
	Medical Students N (%)	Nursing Students N (%)
Male	141 (53.4)	23 (45.1)
Female	123 (46.6)	28 (54.9)
	264	51
Year of School		
Year 4	68 (25.8)	51(100)
Year 5	112 (42.4)	
Year 6	84(31.8)	

3.6 Power Analysis

Using the GPower software, an a priori power analysis was conducted to determine the sample size needed for a two-tailed independent samples t-test with a medium effect size (Cohen's d) (.5) and power of .80. The results showed that a total sample of 128 was needed and the actual power was going to be .803. This suggests that the total sample for the research question (i.e. the second research question) for which the independent t-test will be used was adequate (Faul, Erdfelder, Buchner & Lang, 2013).

In addition, a post hoc power analysis was conducted to determine the power that will be achieved for a two-tailed independent samples t-test with a sample of 51 clinical nursing students and 84 medical students, an alpha (significance) level of .05, and medium effect size (Cohen's d) of .5. The achieved power was .79 (Faul et al., 2013). For a regression with an alpha of 0.05 with several continuous predictors, to achieve a power of .80 and medium effect size (equivalent to an odds ratio of 1.72), a sample size of 286 is required. Hence, the study's sample of 315 students (263 medical and 51 nursing students) was adequate to detect a statistically significant difference.

3.7 Instrumentation

The survey was a single self-administered questionnaire composed of the following: (i) the modified student's version of the University of California, Los Angeles Geriatrics Attitudes Scale (UCLA-GA) (Chua et al., 2008; Reuben et al., 1998), (ii) background experience and interest questions from Fitzgerald and colleagues (2003), and (iii) the measurements for behavioral intention provided by the authors of the reasoned action approach, the guiding theory (Fishbein & Ajzen, 2010).

UCLA-GA Scale. The UCLA-GA scale is a 14-item scale originally validated for measuring attitudes towards older persons among primary care physicians (Reuben et al., 1998). It has subsequently been modified to measure geriatric attitudes among medical students and other health care providers in the United States (e.g. De Biasio, Parkas, & Soriano, 2016; Fitzgerald et al., 2003) and beyond (e.g. In Turkey - Sahin, Mandiracioglu, Tekin, Senuzun, & Akcicek, 2011; in Singapore - Koh, Merchant, Lim, & Amim, 2012; and in the United Kingdom - Hughes et al., 2008). Other health-related fields such as dental (Gupta et al., 2014) and nursing (Türgay et al., 2015) have also used the UCLA-GA scale to measure students' attitudes towards

older persons and providing treatment to the aging population. This instrument is known for its high construct validity and overall reliability (Cronbach's α = .76) (Reuben et al., 1998). Chua and colleagues' (2008) version of the UCLA-GA scale consisting of all 14 questions was adopted and further modified for the Geriatric Specialty Survey. The modification of the instrument entailed rephrasing sentences to fit the language and culture in Ghana. For example, question 8 of the UCLA-GA scale originally read "*I believe that taking a medical history from elderly patients will frequently be an ordeal".* To avoid any confusion leading to measurement error(s), the question was modified by adding "a nightmare" in a parenthesis to read "*I believe that taking a medical history from elderly patients will frequently be an ordeal (a nightmare)".* These modifications in Chua et al. (2008) were maintained (i) using *"government"* instead of *"federal government"* and *"elderly care"* instead of *"Medicare"* for question 2. In relation to the proposed study, the UCLA-GA scale was used to measure one of the independent variables - students' attitudes towards older persons.

RAA. Fishbein and Ajzen's (2010) RAA formed the basis for a component of the questionnaire formulated to measure geriatric specialization intention, the primary dependent variable for this study. Fishbein and Ajzen (2010) provided a well-defined measurement structure for all of its constructs, except the background factors. These measurements have been used and authenticated by researchers across multiple disciplines to predict intention towards performing a behavior (Fishbein & Ajzen, 2010). Finally, included in the questionnaire are self-generated questions focusing on knowledge of a practicing geriatric specialist(s), mentoring opportunities and students' demographics. A copy of the survey can be found under the supplementary materials below.

Other questions. Questions measuring students' personal interest in geriatrics, prior relationships with older persons (both family and nonfamily members), and the quality of those experiences were adopted from Fitzgerald and colleagues (2003). The questions, according to Fitzgerald et al. (2003) were initially formulated by Wilderom and colleagues (1990).

3.8 Variables

Intention (Y_1): The primary dependent variable, intention, was measured using two questions 1) I plan to select geriatric medicine/nursing as my specialty (Other [coded as 0], No [coded as 1], Not Sure [coded as 2], and Yes [coded as 3]) and 2) I will choose geriatric medicine/nursing as my specialty (Extremely Unlikely [coded as 1] to Extremely Likely [coded as 5]). The two questions were combined to develop a composite measure with a maximum possible score of eight (8).

Attitudes (X_1, Y_2): Attitudes was an indenpent variable in sub-study 1 and a dependent variable in sub-study 2. Students were directed to use the UCLA-GA scale to indicate the degree to which they agreed or disagreed with each statement concerning the treatment and care of older persons in the society. The comprised five questions measuring students' positive attitudes and nine questions measuring students' negative attitudes towards aging. All responses were evaluated on a five-item scale ranging from "strongly disagree" to "strongly agree". Following the recommendations from the original authors, Reuben et al. (1998), sentences of positive attitude expressions were scored as "5" points if respondents chose "strongly agree", "4" points if they "somewhat agree", "3" points if "neutral", "2" points if they "somewhat disagree", and "1" point if they "strongly disagree". Negatively worded items were scored in the reverse order as "1" point if they "strongly agree", "2" points if "somewhat agree", "3" points if "neutral", "4" points if "somewhat disagree", and "5" point if "strongly disagree". Composite scores were

developed with the 14 items. The possible range of scores was 14 to 70. Higher scores correspond to more positive attitudes (Reuben et al., 1998; Sahin et al., 2012).

Past experiences (X_2): Prior experiences living with or providing professional services to older persons was measured with the following four questions: (1) *"What is the amount and quality of experiences with grandparents in the past*?" (measured on a four-item scale from none -scoring 0 points to a great deal - scoring 3 points), (2) *"What experience(s) do you have caring for old people (unpaid job) in the past?"* (measured on a four-item scale from none - scoring 0 points to a great deal - scoring 3 points), (3) "*What experience(s) do you have caring for old people (paid job) in the past?*" (measured on a four-item scale from none -scoring 0 points to a great deal - scoring 3 points), and (4) "*What is the overall quality of the experiences with these persons aged 65 and older in the past?"* (measured on a four-item scale from very negative - scoring 0 points to very positive - scoring 3 points). Similar to the Attitudes variable, composite scores were developed with the four items. The possible range of scores was 0 to 12.

Mentoring opportunities (X_3): Concerning mentoring opportunities in students' respective fields, the following question was posed: *"Do you know someone (a professional) specializing in geriatric medicine or geriatric nursing*?"

Personal interest (X_5): Personal interest as an independent variable was measured using the question, "*How would you indicate your interest in geriatric medicine or geriatric nursing as a career?"* This was measured on a four-item response scale ranging from no interest (scoring 1 point) to strong interest (scoring 4 points) and was subsequently recoded into a dichotomous variable (No-to-Low Interest/Moderate-to-Strong Interest).

3.9 Data Collection Procedure

All fourth, fifth and sixth year clinical medical students and fourth year clinical nursing students were invited to voluntarily participate in the Geriatric Specialty Survey. The survey was slightly customized to make it specific to the two groups of students, i.e., the nursing and medical students. The surveys were administered online via Qualtrics over a 4-day period. The duration for survey completion was approximately 10 minutes. The web-based data collection method was fitting as all students at KATH had free access to the internet as part of their academic package from their university, KUNST-SMS. Also, web-based administration of the survey was chosen over a paper and pen/pencil approach because it provides potential participants with the needed flexibility and anonymity (Gunn, 2002). Additionally, the web-based approach was affordable, convenient, and time efficient as official classes for the semester had ended on the researcher's arrival in Ghana in May of 2018. Conducting a face-to-face paper and pen survey would have required more human, financial and technical resources. Although a potential risk of measurement and sampling errors may occur from using a web-based data collection method, the benefits outweighed the cons.

With permission from the appropriate authorities, students were asked to participate in this study by responding to enrollment invitations which included the link to the Qualtrics survey. The invitation was sent to each year group's class chat page by their class leader, using the "WhatsApp" app. Detailed information sheet describing the purpose of the study, the constructs and variables being measured, the name, contact and affiliation of researchers, the procedure of the research, risks and benefits involved, confidentiality assurance, voluntariness nature of the study, compensation, and ethical approval information were included. A copy of the information sheet is provided in the appendix.

Even though participation was completely voluntary, participants received a token in the form of GH₵5 (Ghana cedis) worth of preferred phone service card, also referred to as "phone card credits" for their time. This was equivalent to a $5-gift card at the time of data collection. Participants were asked to provide their email addresses, the initials of their first and last names and their preferred phone credit card to a separate link provided on Qualtrics in order to receive the phone credits. These email addresses were not linked to the survey in any way so responses and identity of participants could not be matched.

3.10 Data Processing

3.10.1 Data Handling

Qualtrics was selected as the host for the surveys because is it secured and protected by Indiana University's security system. With that, the data collected was securely stored without the researcher needing any extra third-party protection. During and after analysis, all data and files related to this dissertation was stored securely in the online storage platform Box account, also provided and protected with a two-level authentication system by Indiana University. Only the researcher and authorized persons had access to the secured data and related files.

3.10.2 Data Cleaning

The survey responses were reviewed resulting in the removal of blank and incomplete surveys. In addition, surveys from participants who did not meet the inclusion criteria, i.e. were not fourth, fifth or sixth year medical students or final year (fourth year) nursing students, were removed. Only those considered valid for analysis were used in this dissertation study.

3.11 Statistical Analyses and Software Packages

The primary software for statistical analyses was the Statistical Package for the Social Sciences (SPSS, v. 26). SPSS was chosen because it provided the relevant tools needed for

statistical analysis. Additionally, free institutional access was provided through Indiana University. In sub-study 2 however, STATA/SE 14.0 (StataCorp, Texas, USA) was adopted to efficiently analyzed the research questions.

3.11.1 Sub-study 1 questions and analyses

Questions*:* (a) Is there significant association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a geriatric specialty among clinical medical students in Ghana? (b) Is there significant association between attitudes, personal interest, past experiences, mentoring opportunities, demographic characteristics, and intention to select a geriatric specialty among clinical nursing students in Ghana?

Analysis: A Poisson regression analysis was conducted to predict medical and nursing students' intention to specialize in geriatrics based on their attitude, past experiences, personal interest, mentoring, and demographic characteristics (i.e., age, gender, and year of school). The dependent variable, intention to specialize, was a count variable, while the independent variables were either continuous or categorical in nature. Therefore, the assumptions that a dependent variable should consist of count data, and the independent variables can be continuous and/or categorical were satisfied. Also, the assumption of independence of observations was satisfied with the study design utilized in that the observations were independent of each other.

3.11.2 Sub-study 2 questions and analyses

Questions: (a) Do the attitudes of final year clinical medical students toward older persons in Ghana differ from the attitudes of final year clinical nursing students? (b) Is there an association between the quality of students' experiences with older persons and their attitudes toward older persons in Ghana?

Analysis: For descriptive statistics, categorical variables were summarized as frequencies and percentages, and continuous variables as means and standard deviations (SD). Mean values were compared using t-tests. A positive attitude was assessed with a mean score of 3 or higher whereas a negative attitude was assessed with a mean score lower than 3. To examine the differences in the attitudes of the students and the association between the overall quality of students' experiences and their attitudes, a two-sample t-test and a one-way analysis of variance (ANOVA) were conducted respectively. Both the t-test and ANOVA had the same dependent variable – "Attitudes toward elderly adults". The independent variables were – student type: medical and nursing (for the t-test) and overall quality of experiences (for the ANOVA). The overall quality of experiences variable was measured with the question, "How would you indicate your overall quality of experiences with persons aged 65 and older in the past?" Initially, the item had a five-level response (very negative, negative, neutral, positive and very positive). These were recoded into three levels – negative, neutral and positive. Thus, the students were divided into three groups according to their experiences (Group 1: Negative; Group 2: Neutral; Group 3: Positive). The compliance test for normal distribution was applied to continuous variables as a check for consistency with parametric test criteria. P-values of < 0.05 were considered statistically significant.

3.12 Statement of Institutional Review Board (IRB) Approval

The Geriatric Specialty Survey was reviewed and exempted by the Indiana University (IU) Human Subjects and Institutional Review Board (IRB Protocol No. 1803860551). Additional IRB approval was acquired internationally through the Committee on Human Research Publications and Ethics (CHRPE) at the KNUST-SMS (reference number CHRPE/AP/211/18). When it became necessary to change the inclusion and exclusion criteria,

an IRB amendment was submitted and approved (reference number CHRPE/AP/240/18). No identifiable information was required for this study.

3.13 Summary

This chapter covered the proposed study's research design which encompassed the sample and source of data, research questions, and the corresponding analytic strategies. In addition, compliance with human subjects' research requirements were addressed. Subsequent chapters cover the results of the analyses and their discussion.

CHAPTER 4: MANUSCRIPT 1

Predicting Medical and Nursing Students' Intention to Specialize in Geriatrics. A Cross-Sectional Study in Ghana.

Grace Karikari, MPH, PhD, CHES*[1], David K. Lohrmann[1], Ph.D, MCHES[1], Lesa Huber, Ph.D[1], Margaret Adamek, MSW, Ph.D[2], & Oghenekaro Omodior, MPH, Ph.D[3]

[1] Applied Health Science Department, Indiana University Bloomington School of Public Health. 1025 E. 7th Street, SPH 116, Bloomington, IN 47405, USA.

[2] School of Social Work, Indiana University Purdue University Indianapolis. 902 West New York Street. ES 4138H. Indianapolis, Indiana 46202-5156

[3] Recreation, Park, And Tourism Studies, Indiana University Bloomington School of Public Health. 1025 E. 7th Street, PH133C, Bloomington, IN 47405, USA.

*** Corresponding Author**

Grace Karikari, 1025 E. 7th Street, SPH 116, Bloomington, IN 47405, USA. Email: gryeboah@indiana.edu, Phone: (001) 317-712-1023, ORCID: https://orcid.org/0000-0002-9023-5393

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Abstract

Background and Objectives: The population of older persons in Ghana is growing rapidly. However, geriatric-specialized healthcare providers are almost non-existent. This study examined whether clinical students' intention towards a geriatric specialty is best influenced by select individual, information, and social background factors that emanate from the Reasoned Action Approach.

Design and Methods: A convenience sample of 263 medical and 51 nursing students undergoing clinical training at the Komfo Anokye Teaching Hospital in Kumasi, Ghana voluntarily participated in this cross-sectional study by completing an online survey. Survey questions addressed (i) students' attitudes, (ii) past experiences, (iii) mentoring opportunities, (iv) personal interest, and (iv) demographic characteristics. In addition to descriptive statistics, a Poisson regression analysis was conducted.

Results: For medical students, personal interest was the best predictor of intention to specialize in geriatrics (B =.462, S.E = .0592, p = .000). After adjusting for other variables in the model, medical students with moderate to strong interest were 1.6 more likely to express an intention to specialize in geriatrics compared to those with low to minimal interest. Also, for medical students, attitudes was significantly associated with intention to specialize in geriatrics (B =.015, S.E = .0048, p = .002). For each unit increase in attitudes, medical students were 1.5 times more likely to express an intention to specialize in geriatrics. For nursing students, personal interest was the sole significant predictor of intention to specialize in geriatrics (B=.456, S.E = .1386, p = .001). After adjusting for other variables in the model, nursing students with moderate to strong interest were 1.6 times more likely to express an intention to specialize in geriatrics compared to those with low to minimal interest.

Discussion and Implications: Interventions geared towards increasing geriatric-oriented healthcare providers in Ghana should focus on enhancing students' interest in the field. Interventions to enhance students' interest could include providing geriatric-focused training and mentorship programs as part of their education curriculum; offering incentives such as scholarships, fellowship opportunities and other financial rewards; and initiating community-based positive interactions with older patients.

Keywords: Geriatric Specialization, Interest, Older Persons, Reasoned Action Approach, Specialty Choices.

Background

Globally, children under age 15 years will be outnumbered by older adults for the first time in history by 2045 (Dotchin, Akinyemi, Gray, & Walker, 2012; World Health Organization [WHO], 2014). Moreover, in most world regions a quarter of the population will be aged 60 years or older by 2050 (UN, 2017). These demographic trends have been attributed to decreases in fertility rates and increases in longevity worldwide (Beard et al., 2016; UN, 2017). In future, additional decreases in fertility and mortality rates will be accompanied by an anticipated rapid growth of older populations in developing areas, including Africa, (Beard et al., 2016; Dey, 2017). Interestingly, limited publicity concerning these rapid demographic changes is available in developing regions even though their aging populations are growing at a faster pace than in developed regions (Dey, 2017; WHO, 2014).[3]

Like many other countries, Ghana is experiencing growth in its older population (Kpessa-Whyte, 2018; WHO, 2014). Though presently youthful, with 40% of the country's population aged less than 15 years and approximately 7% over 60 years, evident, continuous and rapid reduction is occurring among younger age groups due to declines in fertility and mortality rates (Aikins & Apt, 2016; Kpessa-Whyte, 2018; Mba, 2010). By 2030, the population aged under 15 years is expected to decline to 29.4%, while the population over 60 years rises to 8.6% (Kpessa-Whyte, 2018; Mba, 2010). Ghana's year-2000 median age of 18.8 years is also expected to rise to 26 years by 2050 (Kpessa-Whyte, 2018; World Population Review, 2019). The growth rate of Ghana's older population will continue to increase and is expected to reach 14.1% by 2050,

[3] The definitions of developed and developing regions were adopted from the Revised 2017 World Population Prospects by the United Nations (UN, 2017). According to the UN, "the developed regions include Europe and Northern America plus Australia, New Zealand and Japan, while the developing regions include all other parts of the world" (UN, 2017, p. 4).

while the under 15 years age group is expected to decline to 22.3% (Kpessa-Whyte, 2018; Mba, 2010; WHO, 2014).

As Ghana's population ages, accompanied by anticipated increases in chronic conditions affecting older people (Beard et al., 2016; UN, 2017; WHO, 2014), preparing geriatric-oriented healthcare providers with requisite knowledge, attitudes, and skills for providing care and services to older adults needs to be a priority (Esumann et al., 2019; Dotchin et al., 2012; WHO, 2014). To prepare for changes in health service demands and ensure that a specialized healthcare workforce is available to meet demands, the current career intentions of students in training need to be established so as to predict their likelihood of pursuing future careers in geriatrics. Unfortunately, a gap in the literature exists concerning the availability of a geriatric-specialized workforce in Ghana (Dovie, 2019; Esumann et al., 2019; Karikari et al., 2020). Aspiring health providers and their interest in geriatrics, intentions towards the specialty, and factors influencing their geriatric-related career decisions are also understudied (Dotchin et al., 2012; WHO, 2009).

Study Purpose

The purpose of this study was to identify factors that best predict clinical medical and nursing students' likelihood of selecting geriatrics as a future career option; specifically, whether clinical students' intention, a construct of the Reasoned Action Approach, is best determined by select individual, information, and/or social background factors. These select factors are:

Individual Background Factors:

- Attitudes: The general positive or negative perceptions that students have about older persons in Ghana.

- Past experiences: The prior relationships and interactions that students had while caring for older persons, in both clinical and non-clinical settings.
- Personal Interest: Students' personal interest in a geriatrics career.

Social Background Factors:

- Students' demographics: Age, year of school, and gender. (Students' year of school is only applicable to medical students as they comprised three year-designated cohorts.)

Information Background Factors:

- Mentoring opportunities: Knowledge of practicing geriatric specialists in students' respective fields in Ghana.

Theoretical Framework: Reasoned Action Approach

This study is guided by select constructs of Fishbein and Ajzen's (2010) Reasoned Action Approach (RAA). RAA is a psychological theoretical model of behavior change previously used to identify factors underlying people's health-related and non-health-related behavioral decisions, including: consumer behaviors and marketing, career choices, political behaviors, and worksite wellness (McEachan et al., 2016; Sheats, Middlestadt, Ona, Juarez, & Kolbe, 2013). According to RAA, intention (the likelihood of performing a behavior) is the most immediate predictor of behavior. Furthermore, intention is determined by three direct constructs: (1) attitudes towards the behavior (favorable or unfavorable opinions of the behavior), (2) perceived norms (societal perception of the behavior), and (3) perceived behavioral control (perception of one's control over the behavior) (Fishbein & Ajzen, 2010; Sheats et al., 2013). RAA also posits that other indirect determinants (behaviors beliefs, normative beliefs, control beliefs) and background variables (individual, social, information) may also influence behavioral

intention directly or indirectly through the three global constructs (Dayer, 2013; Fishbein & Azjen, 2010; Middlestadt, Sheats, Geshnizjani, Sullivan, & Arvin, 2011).

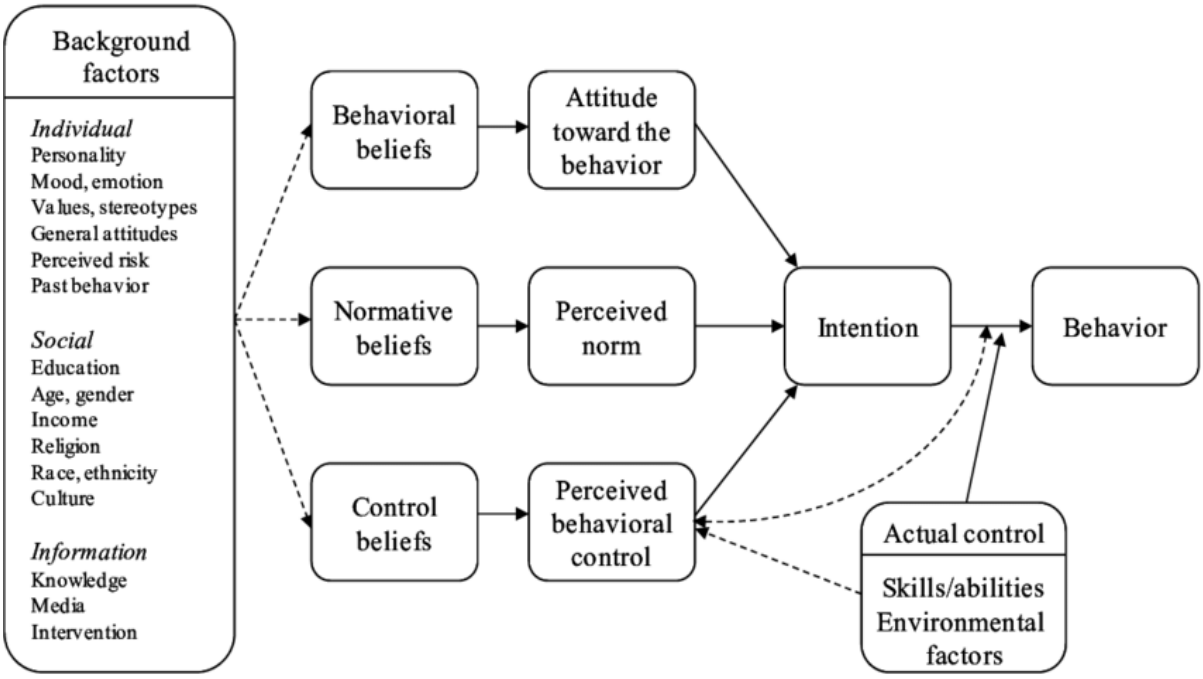
Theory Application

This study applied select constructs from RAA to understand and predict clinical medical and nursing students' intention to choose a specialty in geriatric medicine and geriatric nursing, respectively. Specifically explored were direct and indirect associations between intention and five selected individual, information, and social background variables: attitudes; past experiences; mentoring opportunities; personal interest; and students' demographic characteristics. Although RAA has not been used to study career choices among this specific population of interest, medical and nursing students in Ghana, previous versions of the theory (Theory of Planned Behavior and Theory of Reasoned Action) were used in predicting behaviors among different sub-populations in Ghana. Examples are: condom use intentions of university students (Bosompra, 2001), religion and women's health (Takyi, 2003), understanding emergency contraception practice (Creanga, 2009), behavioral indicators of household decision-making (Tagoe & Abakah, 2014), and evaluation of a Ghanaian school-based and peer-led sexual education program (Krugu, Mevissen, Breukelen, & Ruiter, 2018).

In Fishbein and Ajzen's (2010) original model (see Figure 1), background factors are posited as the origins of associated behavioral, normative, and control beliefs. Background factors are grouped under three categories: (1) individual (personality, mood, emotions, values, stereotypes, general attitudes perceived risk and past behavior); (2) social (education, age, gender, income, religion, race, ethnicity, and culture); and (3) information (knowledge, media, and intervention). Though the relationship between beliefs and background factors cannot be clearly defined, Fishbein and Ajzen trusted that the relationship was indirect (mediated) as

represented by the dotted lines (Dayer, 2013; Fishbein & Ajzen, 2010). The reason for the uncertainty about this relationship is that, unlike the three global constructs, background factors are not yet theorized (Fishbein & Ajzen, 2010). Their applicability and selection are, therefore, dependent on the behavioral domain of interest (Fishbein & Ajzen, 2010).

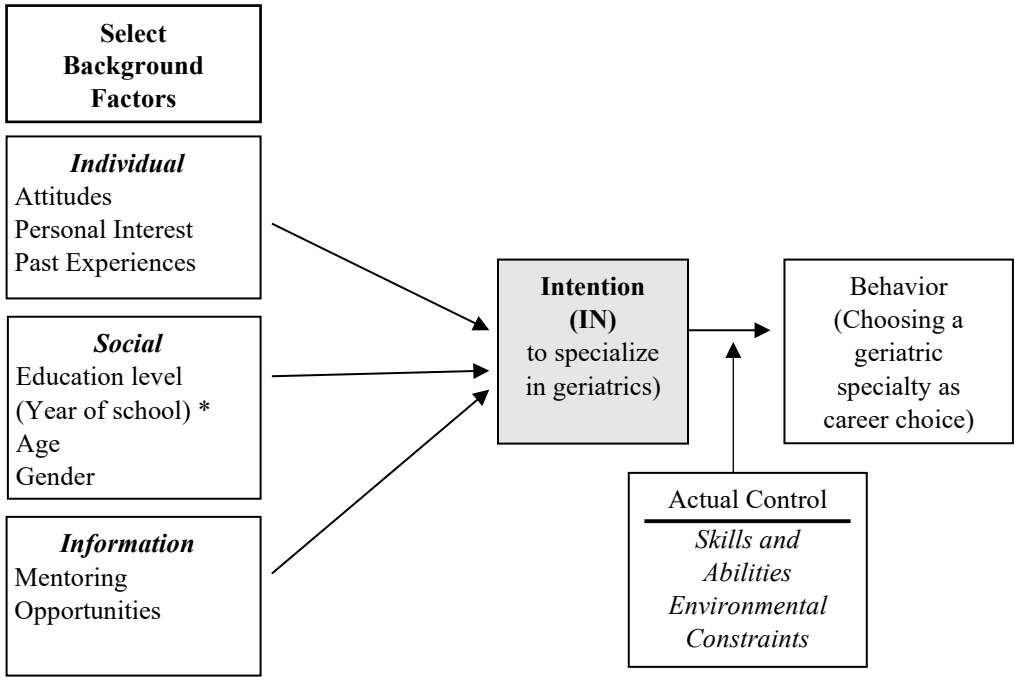
Figure 1: Reasoned Action Model, Fishbein & Ajzen, 2010.



Based on the extant literature about factors influencing students' consideration of a geriatric specialty (e.g., Chua et al., 2008; Turgay et al., 2015; Wang et al, 2009), the following relevant background factors (Figure 1) were selected and operationalized (Figure 2):

- Individual factors of "*general attitudes,"* "*personality,"* and *"past behavior"* were operationalized as "*attitudes*," *"personal interest,"* and *"past experiences,"* respectively.
- Social factors of "*education*" were specified as "*education level,*" *Age"* and "*gender"* were maintained as originally presented in the model.
- Information factors of "*intervention"* were specified as only one intervention type: *"mentoring opportunities*."

Figure 2: Modified Reasoned Action Model: Conceptualizing geriatric specialization intention



* Year of school applicable to medical students only.

This study posits a direct relationship between background factors and geriatric specialty intentions (Figure 2), as demonstrated with straight lines in the model rather than as Fishbein and Ajzen's (2010) original dotted lines. This postulation is made with the assumption that students will have the actual control (i.e., skills, ability and environmental resources) to make career choices.

Ethical Approval

The study was exempted by the authors' institution (IRB Protocol No. 1803860551). Additional IRB approval was acquired through the Committee on Human Research Publications and Ethics (reference number CHRPE/AP/240/18), Kumasi Ghana.

Design and Methods

Study Participants and Setting

Participants were students from the Kwame Nkrumah University of Science and Technology (KNUST) College of Health Sciences, School of Medical Sciences and Department of Nursing involved in clinical training at the Komfo Anokye Teaching Hospital (KATH) in the Ashanti Region of Ghana. KATH, a 1200-bed hospital in the capital city of Kumasi, is the only teaching hospital in the Ashanti region and the affiliate hospital for KNUST College of Health Sciences (KATH, 2019). Clinical medical students were classified as fourth (Year-4), fifth (Year-5), and sixth years (Year-6), whereas clinical nursing students were only fourth years (Year-4).

Data Collection

All Year-4, Year-5 and Year-6 medical students and Year-4 nursing students were invited to voluntarily participate in an online Qualtrics survey (Qualtrics, Provo, Utah). Web-based data collection was appropriate because all KATH students had free, university-provided internet access and Qualtrics is compatible with mobile devices.

Instrumentation

The single, self-administered survey used in this study was comprised of: (i) a modified 14-item University of California, Los Angeles Geriatrics Attitudes Scale (Reuben et al., 1998), known for its high construct validity and overall reliability (Cronbach's $\alpha = .76$) (Reuben et al., 1998); (ii) four items measuring past experiences with older persons/grandparents as volunteers and paid workers from Voogt, Mickus, Santiago, and Herman (2008); (iii) two items assessing intentions to specialize in geriatrics as guided by Fishbein and Ajzen (2010), (iv) one item about knowing a practicing geriatric-oriented professional in their field; and (v) one item assessing

personal interest in geriatrics. Demographics included gender, age, and year of school. The survey was slightly customized for the two distinct student groups by changing "geriatric nursing" to "geriatric medicine" where applicable. Duration of survey completion was approximately 10 minutes.

Dependent and Predictor Variables

The dependent variable, indicating whether students were likely or unlikely to specialize in geriatrics, was developed using two items: I plan to select geriatric medicine/nursing as my specialty (Other [coded as 0], No [coded as 1], Not Sure [coded as 2], and Yes [coded as 3]) and I will choose geriatric medicine/nursing as my specialty (Extremely Unlikely [coded as 1] to Extremely Likely [coded as 5]). Total scores were computed with a maximum possible of eight (8).

Regarding predictors, total scores were computed for the Attitudes and Past Experiences sub-scales. The Attitudes sub-scale consisted of 14 items (Strongly Disagree [coded as 1] to Strongly Agree [coded as 5]). All negatively worded items were reverse coded before the total scores were computed, such that high scores represented more positive attitudes. The Past Experiences sub-scale consisted of four items (None [coded as 1] to A Great Deal [coded as 4]). High scores suggested more experiences. Knowledge of a professional specializing in geriatrics (Yes/No) and gender (Male/Female) were originally set as dichotomous variables. The four-point level of interest response scale (No Interest, Very Little Interest, Some Interest, and Strong Interest) was recoded into a dichotomous variable (No-to-Low Interest/Moderate-to-Strong Interest). Age was maintained as a continuous variable. Year of school was recoded as a three-level nominal variable (Year-4, Year-5, and Year-6). This, however, did not apply to the nursing students who comprised only one class or level (Year 4).

Data Analysis

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS, v. 26). A Poisson regression analysis was conducted to predict medical and nursing students' intention to specialize in geriatrics based on their attitude, past experiences, personal interest, mentoring, and demographic characteristics (i.e., age, gender, and year of school). The dependent variable, intention to specialize, was a count variable, while the independent variables were either continuous or categorical in nature. Therefore, the assumptions that a dependent variable should consist of count data, and the independent variables can be continuous and/or categorical were satisfied. Also, the assumption of independence of observations was satisfied with the study design utilized in that the observations were independent of each other.

In the assumption testing process for medical students, one outlier was exempted from the analysis after examining the Standardized Pearson Residuals. The mean and variance of the model for the medical students were closely aligned. The dependent variable, intention to specialize in geriatrics, had a mean of 4.76 and variance of 4.39; the Pearson Chi-Square Value/df was .556, indicating a case of under-dispersion (Lord & Mannering, 2010). Though the case of under-dispersion is not ideal, the likelihood ratio chi-square test showed that the full model was a significant improvement in fit over the null model, ($X2\ [8] = 99.60$, $p < .001$).

In the nursing students' model, the mean and variance were nearly identical. The dependent variable, intention to specialize in geriatrics, had a mean of 4.86 and variance of 4.68; the Pearson Chi-Square Value/df was .642, indicating a case of under-dispersion (Lord & Mannering, 2010). Though the case of under-dispersion is not ideal, the likelihood ratio chi-square test indicated that the full model was a significant improvement in fit over the null model, ($X2\ [6] = 19.26$, $p < .05$).

Results

Characteristic of Medical Students

Following approximately 600 invitations to clinical medical students, 363 responses were received--a 60.5% response rate. However, 263 responses were considered valid for analysis based on their level of completion. Surveys with missing data on the variables examined for this study were excluded even if students completed the demographic section. The largest groups of respondents were Year-5 (n = 112, 42.4%) and male (n = 141, 53.4%) with average age of 23.6 years. The mode and median ages were both 23 and the minimum and maximum ages were 20 and 40 years, respectively. Additional descriptive information about medical students is provided in Table 1.

Table 1: Characteristics of Medical Students (n = 263)

Age	M (SD)	Gender		Year of School	
Years	23.6 (1.79)	Female	122 (46.6)	Year 4	68 (25.8)
		Male	141 (53.4)	Year 5	111 (42.4)
				Year 6	84 (31.8)
Attitudes	47.6 (5.97)				
Past Experiences	8.03 (2.90)				
Mentoring Opportunity	n (%)				
No	240 (91.3)				
Yes	23 (8.7)				
Personal Interest	n (%)				
No-to-Minimal Interest	169 (64.4)				
Moderate-to-Strong Interest	94 (35.6)				

Characteristics of Nursing Students

Surveys were received from 63 out of 80 Year-4 clinical level nursing students invited to participate-- a 78% response rate. However, 51 responses were considered valid for analysis based on their level of completion. Surveys with missing data for variables examined in this study were excluded even if students completed the demographic section. Most respondents were female (n = 28, 54.9%) with an average age of 23.6 years. The mode and median ages were both 23, and the minimum and maximum ages were 20 and 32 years, respectively. Additional descriptive information for nursing students is provided in Table 2.

Table 2: Characteristics of Nursing Students (n = 51)

Age	M (SD)	Gender	
Years	23.6 (2.28)	Female	28 (54.9)
		Male	23 (45.1)
Attitudes	45.6 (5.13)		
Past Experiences	9.1 (3.41)		
Mentoring Opportunity	n (%)		
No	39 (76.5)		
Yes	12 (23.5)		
Personal Interest	N (%)		
No-to-Minimal Interest	25 (49)		
Moderate-to-Strong Interest	26 (51)		

Medical Students – Poisson Regression

Medical students with strong to moderate interest were significantly more likely to express an intention to specialize in geriatrics (B=.462, S.E = .0592, p = .000). After adjusting for other variables in the model, as compared to students with 'low to minimal interest', students with 'moderate to strong interest' were 1.6 times more likely to express intention to specialize in

geriatrics. Medical students with more positive attitudes towards older persons were significantly more likely to express an intention to specialize in geriatrics (b=.015, S.E = .0048, p = .002). For every unit increase in positive attitudes towards older persons, the intention to specialize in geriatrics increased by 1.015 times, while holding all other variables in the model constant. Past experiences, gender, and age were not significant predictors of students' likelihood to choose geriatrics as their specialty.

Table 3: Medical Students – Poisson Regression Results

Parameter Estimates										
			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
(Intercept)	.321	.4965	-.652	1.294	.418	1	.518	1.378	.521	3.647
4th Year	.126	.0814	-.033	.286	2.402	1	.121	1.134	.967	1.331
5th Year	-.012	.0755	-.160	.136	.025	1	.874	.988	.852	1.146
6th Year	0[a]	.	.	.	.	.	.	1	.	.
Female	.042	.0590	-.074	.157	.500	1	.480	1.043	.929	1.170
Male	0[a]	.	.	.	.	.	.	1	.	.
No Mentoring Opportunity	-.122	.0997	-.318	.073	1.509	1	.219	.885	.728	1.076
Mentoring Opportunity	0[a]	.	.	.	.	.	.	1	.	.
Moderate-to-Strong Interest	**.462**	**.0592**	**.346**	**.578**	**61.065**	**1**	**.000**	**1.588**	**1.414**	**1.783**
No-to-Minimal Interest	0[a]	.	.	.	.	.	.	1	.	.
Age	.014	.0171	-.020	.047	.656	1	.418	1.014	.981	1.048
Attitudes	**.015**	**.0048**	**.005**	**.024**	**9.534**	**1**	**.002**	**1.015**	**1.005**	**1.024**
Past Experiences (Scale)	.009	.0105	-.012	.030	.720	1	.396	1.009	.988	1.030
	1[b]									

$p < 0.05$

Nursing Students – Poisson Regression

Nursing students with strong to moderate interest were significantly more likely to express an intention to specialize in geriatrics (B=.456, S.E = .1386, p = .001). Holding the other variables in the model constant, students with moderate to strong interest, as compared to students with low to minimal interest, were 1.6 times more likely to express intention to specialize in geriatrics. Attitudes, past experiences, knowledge of a practicing geriatric nurse, age, and gender were not significant predictors of students' intention to choose geriatrics.

Table 4: Nursing Students – Poisson Regression Results

Parameter Estimates

			95% Wald Confidence Interval		Hypothesis Test				95% Wald Confidence Interval for Exp(B)	
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.	Exp(B)	Lower	Upper
(Intercept)	.627	1.0096	-1.352	2.606	.385	1	.535	1.872	.259	13.538
Female	-.036	.1359	-.302	.231	.070	1	.792	.965	.739	1.259
Male	0[a]	.	.	.	.	.	.	1	.	.
No Mentoring Opportunity	-.169	.1554	-.474	.135	1.188	1	.276	.844	.623	1.145
Mentoring Opportunity	0[a]	.	.	.	.	.	.	1	.	.
Moderate-to-Strong Interest	**.456**	**.1386**	**.184**	**.728**	**10.827**	**1**	**.001**	**1.578**	**1.203**	**2.071**
No-to-Minimal Interest	0[a]	.	.	.	.	.	.	1	.	.
Age	.008	.0303	-.052	.067	.063	1	.802	1.008	.949	1.069
Attitudes_Total Scores	.009	.0145	-.019	.038	.429	1	.512	1.010	.981	1.039
PastExp_TotalScores	.022	.0208	-.018	.063	1.157	1	.282	1.023	.982	1.065
(Scale)	1[b]									

$p < 0.05$

Discussion

This study aimed to identify which select RAA-related background factors best predict Ghanian clinical medical and nursing students' intentions to choose geriatrics as a specialty. For medical students, personal interest was the best predictor of intention to choose a career in geriatric medicine; it was the sole predictor of intention for nursing students. These findings are consistent with previous reports of associations between students' interest and their consideration of geriatric-related careers (Bagri & Tiberius, 2010; Voogt, et al, 2008). The extant literature for both medical and nursing students worldwide show low levels of interest and consideration of geriatrics as a future career (Bagri & Tiberius, 2010; Chua et al., 2008; Voogt et al., 2008; Wang et al., 2009). Although the reasons for low interest among students in Ghana are under-studied, previous studies in other countries found a direct association between students' low interest in geriatrics and the unavailability of geriatric-focused education (Dotchin et al., 2012; Karikari et al., 2020; WHO, 2009).

In the current study, attitudes toward older persons was a significant predictor of intention for medical students but not for nursing students. Though further exploration is required, a potential reason could be differences in the duration of clinical exposure students receive. Medical students receive six total years of pre-clinical and clinical training whereas nursing students receive only four years of pre-clinical and clinical training (Amalba, Abantanga, & Scherpbier, 2019; Opare & Mill, 2000). Unfortunately, the extant literature does not provide a clear pattern regarding students' attitudes toward older persons and their consideration of a geriatrics career. Some studies have found significant associations (Chua et al., 2008; Fitzgerald et. al, 2003; Liu, Norman & While, 2013), whereas others found the contrary (Curran et al., 2015; Diachun, Hillier, & Stolee, 2006).

Though some of the predictors were not significantly associated with students' intentions to specialize in geriatrics, results still offered important insights. For example, the lack of mentoring opportunity was negatively associated with the intention to specialize. From this, it can be inferred that mentoring opportunities could be harnessed to stimulate students' interest in geriatric practice (Olayemi et al., 2014).

Past experiences caring for grandparents and other older persons was not a significant predictor for either medical or nursing students. This finding is consistent with studies such as Chua et al. (2008) from Singapore, and Diachun et al. (2006) from Canada, who found no association between past experiences and students' consideration of geriatrics careers. Differences in cultural norms and practices, diversity in the types of past experiences with older persons, and the unique impact the experiences had on students can collectively or separately influence their career choices (Liu et al., 2013).

In previous studies where demographics such as age, gender, and education level were considered, female medical and nursing students were most likely to consider a geriatrics career (e.g. Chua et al, 2008; Hweidi & Al-Obeisat, 2006; Liu et al., 2013; Türgay et al., 2015). Older students were also more likely to choose a geriatrics specialty than younger students (e.g., Söderhamn et al., 2001). In the current study, demographic differences were not significant predictors of intention to specialize in geriatrics. Nevertheless, male nursing students were more likely than female students to show an interest in geriatrics. Among medical students, females were more likely than males to show an interest in geriatrics. Consistent with previous research, the current study found that older students in both medicine and nursing were more likely to intend to specialize in geriatrics than younger students. Though the exact explanation for these differences are unexplored in Ghana, one potential reason could be cultural and demographic

uniqueness (Liu et al., 2013; Türgay et al., 2015). Different countries around the world may have unique cultural practices and expectations that could influence gender roles, family systems, career choices, and aspirations (Hweidi & Al-Obeisat, 2005; Liu et al., 2013; Türgay et al., 2015).

Furthermore, year-in-school findings supported previous studies (e.g. Diachun et al., 2006; Wang et al., 2009), as Year-5 and Year-6 medical students were less likely to consider careers in geriatrics. These findings align with the hypothesis that students start medical school with a relatively higher consideration for geriatrics which, thereafter, diminishes due to reinforcement of negative stereotypes and the perceived low priority of geriatrics as a specialty (Chua et al., 2008; Diachun et al., 2006).

Strengths and Limitations

This study provides insights into factors that best predict medical students' intention to choose careers in geriatrics, an underexplored issue in Ghana. Some unique contributions of this study include: (1) this is the first study to examine factors that predict Ghanaian clinical medical and nursing students' intentions and interest towards careers in geriatrics using the RAA as the guiding theoretical framework, and (2) this is one of the few available studies to examine behavioral or career intentions by focusing on the RAA's background factors (individual, social and information) rather than the three global constructs (attitudes towards the behavior, perceived norms, and perceived behavioral control). Nevertheless, findings should be interpreted with caution because of the under-dispersion. Though the under-dispersion in this study can be considered mild, it still could have produced biased results (Lord & Mannering, 2010). Another limitation is that findings and conclusions are based on data from only one institution in one region of Ghana and do not represent the intentions of all Ghanaian medical and nursing

students. Therefore, inferences from this study should be drawn cautiously. Additionally, given the cross-sectional nature of this study, uncertainty exists as to whether observed associations are conclusive. Finally, this study does not establish a causal relationship(s) between intention and any of the predictors.

Implications

Understanding the factors that influence intention to specialize in geriatrics can inform efforts toward strengthening the health sector workforce. Well-trained geriatric specialists will improve the overall health and well-being of older persons in Ghana and reduce the social costs of disease and disability. The guiding theory, RAA, postulates that the single best predictor of whether one will (or will not) perform a behavior is the person's intention (Fishbein & Ajzen, 2010). In this study, students' intention of selecting a geriatrics specialty was very low; meaning that their likelihood of pursuing a career in geriatrics is limited. However, personal interest was found to be the best predictor of intention for medical students and the sole predictor of intention for nursing students. Therefore, in order to ensure that a specialized health workforce is available to meet the health needs of the aging population, interventions should be designed to enhance medical students' interest in geriatrics.

Some interventions to enhance students' interest include: providing geriatric-focused training and mentorship programs as part of their education curriculum; offering incentives such as scholarships, fellowship opportunities and other financial rewards; and initiating community-based positive interactions with older patients (Bagri & Tiberius, 2010; Chua et; al., 2008; Curran et al., 2015; Fitzgerald et al., 2003; Voogt et al., 2008). This study serves as an impetus for future longitudinal studies and additional research designed to more fully understand factors influencing students' interest in pursuing geriatric specialties in developing countries.

Conflict of Interest

None reported.

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CHAPTER 5: MANUSCRIPT 2

Attitudes of Graduating Health Practitioners Toward Older Persons in Ghana

Grace Karikari, MPH, PhD, CHES*[1], David K. Lohrmann[1], PhD, MCHES[1], Lesa Huber, PhD[1], Margaret Adamek, MSW, PhD[2], & Oghenekaro Omodior, MPH, PhD[3]

[1] Applied Health Science Department, Indiana University Bloomington School of Public Health. 1025 E. 7th Street, SPH 116, Bloomington, IN 47405, USA.

[2] School of Social Work, Indiana University Purdue University Indianapolis. 902 West New York Street. ES 4138H. Indianapolis, Indiana 46202-5156

[3] Recreation, Park, And Tourism Studies, Indiana University Bloomington School of Public Health. 1025 E. 7th Street, PH133C, Bloomington, IN 47405, USA.

*** Corresponding Author**

Grace Karikari, 1025 E. 7th Street, SPH 116, Bloomington, IN 47405, USA. Email: gryeboah@indiana.edu, Phone: (001) 317-712-1023, ORCID: https://orcid.org/0000-0002-9023-5393

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ABSTRACT

Purpose: This study examined attitudes of graduating medical and nursing students toward older persons in Ghana. The association between the overall quality of students' experiences with older persons and their attitudes was also examined to identify educational interventions to increase interest in geriatrics.

Materials and Methods: A sample of 135 final year medical and nursing students from a public institution in Ghana participated in a cross-sectional study by completing a web-based self-administered questionnaire consisting of the 14-item University of California at Los Angeles Geriatric Attitudes (UCLA-GA) scale and demographic questions. Data analysis involved a two-sample t-test and a one-way ANOVA.

Results: Overall, most participants (82.2%) held positive attitudes towards older persons. Medical students had significantly more positive attitudes toward older persons (3.50 ± 0.44) than nursing students (3.26 ± 0.38) ($t\,[133] = 3.257$, $p = .001$). The association between students' attitudes and the quality of their experiences with older persons was significant ($F\,[2, 132] = 7.062$, $p = .001$). Students whose experiences with older persons were negative had the least positive attitudes.

Conclusion: Considering the impact of previous experiences with older persons on medical and nursing students' attitude in Ghana, training to increase interest in geriatrics should include positive clinical and community-based exposure.

Keywords: Attitudes towards older persons, Geriatrics, Ghana, Medical Students, Nursing Students

1. INTRODUCTION

The population of older persons in Africa has grown exponentially (Aikins & Apt, 2016; Dotchin, Akinyemi, Gray, & Walker, 2012; United Nations [UN], 2017), with the number of people 60 years of age living in sub-Saharan Africa projected to increase from 34 million in 2005 to 67 million by 2030 (Tawiah, 2011). Africa's median age of 18.6 years in 2010 is also anticipated to increase by 46% to 27.2 years in 2050 (Kpessa-Whyte, 2018; Tawiah, 2011). In West Africa, Ghana has one of the fastest growing aging populations (Aikins & Apt, 2016; Kpessa-Whyte, 2018; World Health Organization [WHO], 2014). The aging population rose from 4.6 % of Ghana's total population in 1960 to 7.2% in 2015 and is anticipated to reach 11.9% by 2050 (Adinkrah, 2018; Aikins & Apt, 2016; Mba, 2010; Kpessa-Whyte, 2018; WHO, 2014). This increase in the older adult population in Ghana has been attributed to improvements in life expectancy along with declines in fertility and mortality rates (Aikins & Apt, 2016; Kpessa-Whyte, 2018; Mba, 2010).

While improvements in life expectancy offer opportunities for Ghana, anticipated related demands, especially on healthcare delivery along with infrastructure and services, will require the nation's attention (Mba, 2010; WHO, 2014). Health authorities recommend that health care services to older adults be rendered by geriatric-trained providers (Dotchin et al., 2013; Fitzgerald et al., 2003; Sahin, Mandiracioglu, Tekin, Senuzun, & Akcicek, 2011; WHO, 2014). Yet, as in most countries, insufficient geriatricians are available to meet the needs of the aging Ghana population (Dotchin et al., 2013; Dovie, 2019; Essuman et al., 2019). Though the underlying reasons for the lack of geriatric-oriented health care providers in Ghana are still being explored, one major factor identified as a predictor of interest and consideration of a geriatric career is the attitudes of health providers towards aging and older adults (Fitzgerald et al., 2013;

Reuben et al., 1998; Sahin et al., 2011). Considering that medical and nursing students in Ghana will be encountering and providing services to older patients during their clinical training and upon being employed, exploration of their attitudes towards older persons is critically important.

1.1. Study purpose

The study had two aims: to explore possible differences in the attitudes of graduating nursing and medical students in Ghana towards older persons and to investigate the association, if any, between students' overall quality of experiences (positive, neutral, or negative) with older persons and their attitudes towards older persons in Ghana. To the authors' knowledge, no previous study has employed the UCLA-GA scale to assess the attitudes of clinical students or health professionals towards older persons in Ghana.

2. MATERIALS AND METHODS

This cross-sectional study was conducted in Kumasi, Ghana. Participants completed a web-based self-administered questionnaire via Qualtrics®. Ethical approvals were received from the authors institution (IRB Protocol No. 1803860551), and the Committee on Human Research Publications and Ethics (reference number CHRPE/AP/240/18) in Kumasi, Ghana.

2.1. Study participants

Final-year (6^{th} -year) medical students and final-year (4^{th}-year) nursing students from the Kwame Nkrumah University of Science and Technology (KNUST) College of Health Sciences participated in this study. At the time of data collection, all participants were undergoing clinical training and had provided some sort of supervised services to older patients (e.g. taking medical history) at the Komfo Anokye Teaching Hospital, KNUST's affiliate hospital.

2.2. Questionnaire

The University of California at Los Angeles Geriatric Attitudes (UCLA-GA) scale was adopted to measure students' attitudes; select sociodemographic variables were also collected. The UCLA-GA scale is a 14-item, 5-point Likert scale originally validated for measuring attitudes towards older persons and providing care for older patients among primary care physicians (Reuben et al., 1998). It has subsequently been modified to measure geriatric attitudes among medical students and other health care providers in the United States, (e.g., De Biasio, Parkas, & Soriano, 2016; Fitzgerald et al., 2003;), Turkey (Sahin et al., 2011), Singapore (Koh, Merchant, Lim, & Amim, 2012) and the United Kingdom (Hughes et al., 2008). Other health related fields such as dental (Gupta et al., 2014) and nursing (Türgay et al., 2015) have also used the UCLA-GA scale to measure students' attitudes towards older persons and providing treatment to the aging population. This instrument is known for its high construct validity and overall reliability (Cronbach's $\alpha = .76$) (Reuben et al., 1998).

The items on the scale had the options of "strongly agree", "somewhat agree", "neutral", "somewhat disagree", and "strongly disagree". Following the recommendations from the original authors, Rueben et al. (1998), positively worded attitude expressions were scored as "5" points if respondents chose "strongly agree", "4" points if they "somewhat agree", "3" points if "neutral", "2" points if they "somewhat disagree", and "1" point if they "strongly disagree". Negatively worded items were scored in the reverse order as "1" point if they "strongly agree", "2" points if "somewhat agree", "3" points if "neutral", "4" points if "somewhat disagree", and "5" point if "strongly disagree". Five of the 14 statements selected were worded positively (questions: 1; 4; 7; 9; 14), and nine were worded negatively (questions: 2; 3; 5; 6; 8; 10; 11; 12; 13). Scores of reversed negatively worded items are added to positively worded items to produce the total

score. The possible range of scores was 14 to 70. Higher scores correspond to more positive attitudes (Reuben et al., 1998; Sahin et al., 2011). The UCLA-GA scale has high reliability (Cronbach's α = .76) and known-groups and construct validity (Reuben et al., 1998).

2.2.1. Instrument modifications

The instrument was modified to adapt it to the language and culture in Ghana. First, question 8 of the UCLA-GA scale originally read "*I believe that taking a medical history from elderly patients will frequently be an ordeal".* To avoid any confusion leading to measurement error(s), the question was modified by adding "a nightmare" in parenthesis to read "*I believe that taking a medical history from elderly patients will frequently be an ordeal (a nightmare).*" Also, these modifications in Chua et al. (2008) were adopted (i) using *"government"* instead of *"federal government"* and *"elderly care"* instead of *"Medicare"* for question two. The term "elderly" was retained in the questionnaire as it was the most common term for referencing older persons in Ghana at the time of data collection.

2.3. Data analysis

Data were analyzed using STATA/SE 14.0 (StataCorp, Texas, USA). For descriptive statistics, categorical variables were summarized as frequencies and percentages, and continuous variables as means and standard deviations (SD). Mean values were compared using t-tests. A positive attitude was assessed with a mean score of three or higher whereas a negative attitude was assessed with a mean score lower than three. To examine the differences in the attitudes of the students and the association between the overall quality of students' experiences and their attitudes, a two-sample t-test and a one-way analysis of variance (ANOVA) were conducted, respectively. Both the t-test and ANOVA had the same dependent variable – "Attitudes toward elderly adults". The independent variables were – student type: medical and nursing (for the t-test) and overall quality of experiences (for the ANOVA). The overall quality of experiences

variable was measured with the question, “How would you indicate your overall quality of experiences with persons aged 65 and older in the past?” This item’s original five-level response scale (very negative, negative, neutral, positive and very positive) was converted to three levels--negative, neutral and positive. Thus, the students were divided into three groups according to their experiences (Group 1: Negative; Group 2: Neutral; Group 3: Positive). The compliance test for normal distribution was applied to continuous variables as a check for consistency with parametric test criteria. P-values of < 0.05 were considered statistically significant.

3. RESULTS

3.1. Characteristics of students

Demographic characteristics of the students are presented in Table 1. Reported results involved responses from all 135 participants (84 medical students and 51 nursing students). The mean ages and related standard deviations for medical and nursing students were 24.73 ± 2.00 and 23.59 ± 2.32, respectively. More medical students (62.2%) and males (57.0%) completed the survey.

Table 1: Demographic Characteristics of Students

	Medical Students (n= 84)		Nursing Students (n= 51)	
Factors	n	%	n	%
Age Category (years)				
18-24	35	41.7	37	72.6
25-29	47	56.0	12	23.5
30+	2	2.4	2	3.9
Sex				
Male	54	64.3	23	45.1
Female	30	35.7	28	54.9

3.2. Experiences caring for older persons

More than half of the students (59.3%) had no experience caring for older persons in the past as a paid job, while 11.9% had experiences caring for older persons as an unpaid job. Almost half (47.4%) self-reported overall assessment of the quality of their experiences with older persons in the past as positive, with 40.7% assessing their experiences as neutral (neither negative nor positive).

Table 2: Distribution of Students' Experiences with Older Persons

	Medical Students		Nursing Students	
Factors	n	%	n	%
Experiences caring for elderly as unpaid job in the past				
A great deal	8	9.5	8	15.7
Some	23	27.4	17	33.3
Very little	25	29.8	13	25.5
None	28	33.3	13	25.5
Experiences caring for elderly as paid job in the past				
A great deal	3	3.6	3	5.9
Some	10	11.9	23	45.1
Very little	14	16.7	13	25.5
None	57	67.9	12	23.5
Overall quality of the experiences with elderly in the past				
Positive	45	53.6	27	52.9
Negative	6	7.1	2	3.9
Neutral	33	39.3	22	43.1

3.3. Attitudes towards older persons

The grand mean of the UCLA-GA scale was 3.41 ± 0.41 (min: 2.29, max: 4.64). The majority of students (82.2%) had positive attitudes toward older persons. Medical students had significantly more positive attitudes toward older persons (3.50 ± 0.44) than nursing students (3.26 ± 0.38) ($t [133] = 3.257$, $p = .001$). Additional findings specified by student group are shown in Table 3.

Table 3: Distribution of the UCLA-GA Scale Scores by Socio-Demographic Characteristics of Students.

	UCLA-GA scale score Means (SD)		
Factors	Medical	Nursing	P value
Age Category (years)			
18-24	3.52 (0.43)	3.28 (0.33)	0.012*
25-29	3.47(0.44)	3.11 (0.46)	0.017*
30+	3.96 (0.45)	3.71 (0.10)	0.527
Sex			
Male	3.52 (0.44)	3.22 (0.37)	0.006*
Female	3.47 (0.44)	3.29 (0.39)	0.113
Experiences caring for elderly as unpaid job in the past			
A great deal	3.89 (0.42)	3.38 (0.35)	0.019*
Some	3.43 (0.45)	3.29 (0.35)	0.292
Very little	3.52 (0.42)	3.25 (0.39)	0.063
None	3.44 (0.42)	3.16 (0.42)	0.064
Experiences caring for elderly as paid job in the past			
A great deal	4.24 (0.35)	3.10 (0.29)	0.012*
Some	3.32 (0.31)	3.43 (0.20)	0.321
Very little	3.47 (0.32)	3.23 (0.40)	0.099
None	3.50 (0.46)	3.20 (0.43)	0.009*
Overall quality of the experiences with elderly in the past			
Positive	3.62 (0.45)	3.36 (0.32)	0.009*
Negative	3.07 (0.46)	3.04 (0.15)	0.921
Neutral	3.41 (0.36)	3.16 (0.42)	0.022*

*t-test was used to compare the means. *significant at $p < 0.05$.*

3.4. Overall quality of experiences and Attitudes

The one-way ANOVA revealed significant differences in the attitudes of students based on their experiences with older persons (F [2, 132] = 7.062, p = .001). The effect size (eta squared) was .10. Per the criteria proposed by Cohen (1988), this suggests a more than moderate effect size. Tukey HSD post hoc comparisons showed that students with negative experiences (Negative; M = 3.06, SD = .392) and students with neutral experiences (Neutral; M = 3.31, SD = .402) differed significantly from students with positive experiences (Positive; M = 3.52, SD = .424). However, students with negative experiences and those with neutral experiences did not differ significantly from each other (see Table 4).

Table 4: One-way ANOVA (and Post Hoc Comparisons): Overall Quality of Experiences and Attitudes

	Sum of Squares	df	Mean Square	F
Between Groups	2.416	2	1.208	7.062*
Within Groups	22.581	132	0.171	
Total	24.997	134		

Tukey HSD Post Hoc Comparisons

(I) Overall quality of experiences		Mean Difference (I-J)	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
Negative	Neutral	-0.25049	0.15650	-0.6215	0.1205
Positive	Negative	.46131**	0.15414	0.0959	0.8267
	Neutral	.21082**	0.07407	0.0352	0.3864

***p < .001, ** p < .05**

4. DISCUSSION

The study assessed differences in attitudes towards elders of graduating medical and nursing students in a public institution in Ghana. The association between the quality of their experiences with older persons and students' attitudes was also examined. Graduating medical students were shown to have more positive attitudes towards older persons than nursing students. Similar results were reported from Turkey and Spain where Turkish and Spanish medical students showed more positive attitudes toward older persons than nursing students (Ayog˘lu, Kulakçı, Ayyıldız, Aslan, & Veren, 2014; Zambrini, Moraru, Hanna, Kalache, & Nunez, 2008). In these similar studies, researchers attributed the differences in attitudes to the sociodemographic characteristics of students, exposure to geriatric education, and encounters with healthy older persons in the community (Ayog˘lu et al., 2014; Zambrini et al., 2008). In some studies, however, nursing students were found to have more positive attitudes than medical students (e.g., Fajemilehin, 2014 from Nigeria; Wang et al., 2009 from Taiwan). Authors of

these studies reported that nursing students' more positive attitudes resulted from their frequent clinical interactions and services to older persons in hospitals. To the contrary, Sahin et al. (2012) found no differences in attitudes towards older persons between medical and nursing students in Turkey.

In the current study, an additional plausible reason accounting for the differences in students' attitudes toward older persons was identified. Findings showed an association between the overall quality of students' experiences and their attitudes toward older persons. Students whose quality of experiences with older persons was negative had the least positive attitudes compared to students with positive experiences. This implies that the quality of students' experiences while interacting with older persons plays an essential role in the attitudes towards geriatric practice that they develop. For this reason, attention should be given to creating positive experiences with older adults in both clinical and community settings in Ghana.

In the current study, overall attitudes toward older persons among participants as assessed by the UCLA-GA scale were primarily positive (82.2%). Interestingly, the literature provides contrasting findings concerning overall attitudes of students toward older persons in different societies. Many studies focusing on attitudes among medical students before the year 2000 reported mostly indifferent and negative attitudes towards older persons (e.g., Brooks, 1993; Coccaro & Miles, 1984; Duerson, Thomas, Chang, & Stevens, 1992; Green, Keith, & Pawlson, 1983; Warren, Painter, & Rudisill, 1983). Negative attitudes were attributed to stereotypes and beliefs that diseases related to older persons are chronic and untreatable. Intervening during the later years was considered a waste of resources as the health of older persons will naturally decline (Duerson et al., 1992). Interestingly, a shift towards positive attitudes seems to have materialized in recent years. In their study of first year medical students in Singapore, Chua and

colleagues (2008) found positive attitudes among students, though only one in three students was willing to pursue geriatrics. A similar result was found in a pilot study by Hughes et al. (2008) among medical students at the University of Aberdeen (in Scotland). A potential explanation for some of the reported findings could be that medical students in recent years have earlier exposure and better awareness of the needs of older persons in their societies (Chua et al., 2008).

Attitudes of nursing students toward older persons have also been explored at length but have no clear pattern of either extensive negative or positive attitudes (Liu, Norman, & While, 2013). Ball (1999) reported positive attitudes among University of Massachusetts undergraduate students in the nursing program regardless of their individual characteristics. Likewise, Hweidi and Al-Obeisat (2006) reported positive attitudes among Jordanian nursing students. However, they reported a strong correlation between students' attitudes and their socio-economic status. Adding to the findings on positive attitudes are Gallagher, Bennett and Halford (2006) from the United Kingdom, Myers, Nikiletti and Hill (2001) from Australia, Pan, Edwards and Chang (2009) from Taiwan, Türgay et al. (2014) from Turkey, and Wu (2011) from China. Neutral attitudes have also been reported by Chen and Walsh (2009) from Taiwan, and Erdemir et al. (2011) from Turkey. Conversely, an international systematic review of both registered nurses and nursing students by Liu et al. (2013) revealed negative attitudes, adding that nursing students' attitudes towards older persons have been less positive since the year 2000. The variation in attitudes observed by various researchers from different countries could be reflective of the different cultures, students, unique characteristics, and aging-related policies that exist within nations (Liu et al., 2013; Myers et al., 2001).

5. CONCLUSION

To meet the growing need for geriatric specialists in Ghana, students' interest in providing geriatric care must be encouraged. Graduating medical students in this study were found to have more positive attitudes toward older persons and providing care to older persons than graduating nursing students. Students' attitudes were significantly affected by the overall quality of experiences they have had with older persons in the past. To improve attitudes toward geriatric care among Ghanaian students, the professional preparation curriculum, especially for nursing students, should include both clinical and community-based positive experiences with older persons. For instance, developing and testing community-based learning interventions that pair students with healthy older adults could help correct some of the negative stereotypes and enhance positive experiences (Lu, Hoffman, Hosokawa, Gray, & Zweig, 2010). Educational content that explains the aging proces and considerations for communicating with aging patients can also be incorporated in students' curricula (Hughes, et al., 2008).

Study Limitations

To the authors' knowledge, this is the first study to explore differences in Ghanaian medical and nursing students' attitudes towards older persons using the UCLA-GA scale. However, the study involved a small sample size and was limited to only one public institution in the Ashanti Region of Ghana. Findings should, therefore, be interpreted with caution. Moreover, since this was a cross-sectional study, it is uncertain whether students' experiences with older adults preceded attitudes towards older adults. It could be that these two variables are mutually influential. That is, students with positive attitudes toward older people are more likely to have had good quality experiences with older adults.

Future Research

Future studies should consider including more medical and nursing institutions, expanding the sample size, and utilizing a random sampling method. A longitudinal study is also highly recommended for exploring and monitoring the trends and patterns of attitudes of health professionals in Ghana. Similarly, a longitudinal study would be instrumental in fostering a better understanding of the time dimension for association between experiences and attitudes.

Conflict of Interest

Authors have no conflict of interest related to this study

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CHAPTER 6: REFLECTIONS

Dissertation Conceptualization and Inspiration

My interest in understanding the process of aging and issues related to older adults sprouted after witnessing an unfortunate cultural and educational deficit among healthcare providers in a rural community in Ghana. A few years ago, my mother was notified of my great grandmother's neglect and near-death condition at a vulnerable age of 95. This was because her caregivers in her rural community neither had the knowledge nor appropriate resources to care for her dementia, which some rural folks ignorantly considered as witchcraft. Thankfully, my mother got her to the city to receive medical attention but, she later died from dementia related complications. Since then, I have been desiring to explore ways of addressing the health needs and wellbeing of older persons in Ghana through the integration of research, education and practice. My first approach to achieving this goal is to gain some understanding into the aging-related education healthcare providers receive, the availability of geriatric specialized healthcare providers in the country, their willingness to provide care to the aging population, and the factors contributing to their career choices. This dissertation focused on identifying the factors that influence geriatric specialization intention among medical and nursing students in a public institution in Ghana. It is an aspect of the broader goal.

During the conceptualization of the dissertation, one of the challenges I encountered was the dearth of studies on aging in Ghana. The available empirical literature focused on demographic profiles and patterns of aging, health status of older persons, older persons care and support systems, roles and responsibility of the aged, social representation of older persons, and issues relating to socioeconomic status. Studies related to geriatric specialization programs for healthcare providers; geriatric-oriented workforce in Ghana; or nationwide initiatives toward specialized care for the aging population were almost nonexistent. Consequently, finding

sufficient studies to guide the framing of research problems and related research questions became overwhelming. Thankfully, with mentoring from some senior scholars in the field and my research advisors, Dr. David Lohrmann and Dr. Lesa Huber, I progressed through this process.

Data Collection

Data utilized in this dissertation were successfully collected in summer 2018 in Kumasi, Ghana. The initial proposal was to include all medical and degree nursing students who are 18 years or older at Kwame Nkrumah University of Science and Technology-School of Medical Sciences and School of Nursing in the study which was a very ambitious goal. However, after consulting and reviewing the study questionnaire with local experts in Ghana, it was advised that I include only clinical students, which are the fourth to sixth year medical students and fourth year nursing students. The primary reason for this change was that some of the questions demanded prior knowledge and experiences with older patients which students who are yet to begin their clinical practice (first to third year students) may be unable to sufficiently respond to. Being on the field, I had to learn to be flexible and willing to modify my research plans, which included rephrasing some of the questions in the survey to make them culturally appropriate, being flexible with recruiting the desired sample, adjusting the data collection mode to web based, and shortening the data collection time frame to accommodate an oncoming examination.

I also had to learn to be teachable enough to accept criticisms as well as advice from experts, especially from the Dean of the School of Medical Sciences, Prof. Daniel Ansong and his team at KATH Research and Development Unit. The Dean and his team were very supportive of the purpose of my research and its potential contribution to the geriatric literature and workforce recruitment in Ghana. They were also instrumental in securing the needed ethical

and administrative approvals from the respective local authorities prior to data collection. Regardless of the challenges encountered, and changes made on the field, recruitment was quite successful with approximately 62% overall response rate.

Data Analysis and Writing

The statistical techniques I learned during my course work came in handy during the data cleaning and analysis phases. Nevertheless, some challenges were encountered that meant redoing some of my analyses and seeking expert-assistance. This prolonged the time frame for writing but, through the process, I learned how to conduct and interpret new statistical outputs. I also learned the importance of reaching out for help when needed rather than suppressing my struggles and making incorrect inferences or assumptions. This is an important skill for me to develop further as research is collaborative and peer-review/feedback is unavoidable in academia. Also, considering that this is a novel research area in Ghana, reporting accurate results and making the correct interpretations needed to take precedence. Scholarly writing, however, is still a learning process for me. My committee members were very gracious in reviewing, correcting, and guiding me to produce the best possible manuscripts. Permitting me to format my dissertation into sub-studies also made the workload manageable.

Future Research and Career Aspirations

For future studies, I desire to expand this study to include other medical and nursing schools in Ghana. I also intend to seek initiatives to conduct qualitative as well as longitudinal research on various aspects of geriatrics education and workforce recruitment. It is worth noting that the percentage of the older population in Ghana is rising. Yet, limited knowledge, coupled with a lot of misconceptions and cultural/societal myths concerning aging and the principal needs of the older population persist.

In line with this, I aspire to promote and facilitate gerontology and geriatrics education into the college level curricula in Ghana as that is currently lacking in the public tertiary institutions. This initiative will involve interdisciplinary collaboration as the issue of aging and the wellbeing of older persons is not only a public health issue but an interdisciplinary issue. It is my hope that my future employment will afford me the opportunity to explore and promote gerontology/geriatrics education and research.

Personal Reflection

Completing my doctoral dissertation was challenging yet very inspiring on many levels. I had been engaged in several research projects prior to my enrollment in this doctoral program. However, most of those experiences involved teams hence, one's limitations were often covered by another person's strength and vice versa. As relevant as my past experiences were, they are not comparable to an individual conceptualizing a doctoral research project, collecting and analyzing the data, and writing the dissertation within a set period of time. From my experience, having a dedicated and supportive research committee was key to my success. I am therefore thankful to the members of my research committee, Dr. David Lohrmann, Dr. Lesa Huber, Dr. Margaret Adamek and Dr. Karo Omodior for prioritizing my success and well-being throughout this process.

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APPENDIX A: INFORMATION SHEET

Note: The information sheet was available to all participants through Qualtrics. Only the quantitative aspect of the data (survey) was used in this dissertation.

Participant Information Leaflet

Title of Research: Identifying Intention to Specialize in Geriatric Medicine and Nursing Through the Measurement of Attitudes, Interest, beliefs and Experiences. A study of Medical and Nursing Students in Ghana.

Name(s) and affiliation(s) of researcher(s): This study is being conducted by Grace Karikari and supervised by Dr. David Lohrmann and Dr. Lesa Huber all of Indiana University Bloomington, School of Public Health, Bloomington Indiana, USA.

Purpose(s) of research: The purpose of this study is to identify the factors that would influence the intention of medical and nursing students to specialize in geriatric medicine and nursing in Ghana. The factors to be measured will be about students' attitudes towards older adults, beliefs about aging and older adults, interest in caring for and/or treating older adults in the future, and past experiences of caring for or living closely with an older adult. Older adults in this study refers to persons aged 65 and above.

Procedure of the research, what shall be required of each participant and approximate total number of participants that would be involved in the research: There will be two parts to this study, but participants are not in any way obliged to participate in both.

i. Survey: Students will be invited to participate and complete an online survey which will take approximately 10 - 20 mins.
ii. Interviews: The second part is to participate in an in-person interview with the researcher. The interview is expected to last for approximately 45 -60 minutes.

Participants can choose to participate in either or both parts.

Risk(s): The risks of participating in this research are being uncomfortable answering the survey questions and/ or interview questions. There is also a risk of loss of confidentiality which the researchers will make the maximum efforts to protect.

Benefit(s): Findings from this study will contribute to the knowledge-base of aging and geriatric care for older adults in Ghana. In addition to that, appropriate interventions could be created to increase students' interest in geriatric medicine and nursing as a specialty.

Confidentiality: Efforts will be made to keep your personal information confidential. However, for this study, identifiable information such as your name, date of birth, student ID number or email address will not be recorded. Email addresses will be the only information needed to send participants' compensation.

Voluntariness: Your participation in this study is entirely voluntary.

Alternatives to participation: There is no penalty to you if you decide not to participate.
Withdrawal from the research: You may choose to withdraw from the research at anytime without having to explain yourself. Compensation will however be awarded to participants at the end of full participation. Compensation is a token of appreciation of the time participants spend to fully participate in the study.

Consequence of Withdrawal: There will be no consequence, if you choose to withdraw from the study. Please note however, that some of the information that may have been obtained from you without identifiers (name, address, etc), before you chose to withdraw, may have been modified or used in analysis reports and publications.

Costs/Compensation: Participation in this study is completely voluntary. **Participants will not be paid**. However, they will receive a token in the form of GH₵5 (survey) and GH₵10 (interview) worth of preferred phone service card (MTN, Vodaphone, Airtel or Tigo) for their time. The token will only be given to participants who fully complete either the survey or interview section. Participants are not required to participate in both sessions to receive their compensation.

Contacts: If you have any question concerning this study, please do not hesitate to contact
Primary Contact Person: Karikari Grace, MPH, CHES **(**Student Researcher**)**
Indiana University School of Public Health
Email: gryeboah@indiana.edu
Phone: (001) 812 855-1561

Academic Advisor/Supervisor: David Lohrmann, PhD
Indiana University School of Public Health
1025 E 7th St #111, Bloomington, IN 47405
Email: dlohrman@indiana.edu
Phone: (001) 812 856-5101

Co-Academic Advisor/Supervisor: Lesa Huber, PhD
Indiana University School of Public Health
1025 E 7th St #111, Bloomington, IN 47405
Email: lehuber@indiana.edu
Phone: (001) 812 855-1733

Further, if you have any concern about the conduct of this study, your welfare or your rights as a research participant, you may contact:

The Office of the Chairman
Committee on Human Research and Publication Ethics
Kumasi
Tel: 03220 63248 or 020 5453785

APPENDIX B: QUESTIONNAIRE: COMBINED

Note: On the online platform, Qualtrics, the survey was separated and customized by replacing geriatric medicine with geriatric nursing where necessary. The primary contents however, remained the same.

PART I-Attitudes. Directions: Please use the scale below to indicate the degree to which you agree or disagree with each statement. The scale below is a modified version of the University of California, Los Angeles (UCLA) Geriatrics Attitudes Scale (Chua et. al., 2008; Reuben et. al 1998)

	Strongly Disagree	**Somewhat Disagree**	**Neutral**	**Somewhat Agree**	**Strongly Agree**
1. Most old people are pleasant to be with.	1	2	3	4	5
2. The government should reallocate money from care of the elderly to research on AIDS or pediatric diseases.	1	2	3	4	5
3. If I have the choice, I would rather see younger patients than elderly ones.	1	2	3	4	5
4. It is society's responsibility to provide care for its elderly persons.	1	2	3	4	5
5. Medical care for old people uses up too much human and material resources.	1	2	3	4	5
6. As people grow older they become less organized and more confused.	1	2	3	4	5
7. Elderly patients tend to be more appreciative of the medical care they receive than are younger patients.	1	2	3	4	5

8. I believe that taking a medical history from elderly patients will frequently be an ordeal (a nightmare).	1	2	3	4	5
9. I tend to pay more attention and have more sympathy towards elderly patients than younger patients.	1	2	3	4	5
10. Old people in general do not contribute much to society.	1	2	3	4	5
11. Treatment of chronically ill old patients is hopeless.	1	2	3	4	5
12. Old people don't contribute their fair share towards paying for their healthcare.	1	2	3	4	5
13. In general, old people act too slow for modern society.	1	2	3	4	5
14. It is interesting listening to old peoples' accounts of their past experiences.	1	2	3	4	5

PART II- Education: Directions: Please use the scale below to indicate the degree to which you agree or disagree with each statement. The scale below is based on the educational preparation attitudes toward medical care of older adults section of the Maxwell–Sullivan Attitudes Scale (Maxwell & Sullivan, 1980).

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
1. In my classes, problem cases in geriatrics are frequently presented.	1	2	3	4	5
2. My training will enable me easily to use and coordinate community agencies.	1	2	3	4	5
3. My exposure to geriatric medicine and care has been adequate.	1	2	3	4	5
4. Medical/nursing education that fails to prepare the physician to care for the growing elderly patients is unrealistic.	1	2	3	4	5
5. More training is needed to prepare health practitioners to provide care to elderly patient.	1	2	3	4	5
6. My lectures in nursing/medical school avoids instruction in geriatric medicine.	1	2	3	4	5
7. I feel equipped to be able to manage geriatric cases after school.	1	2	3	4	5

PART III-Experience, Interest & Intention. Directions: Please indicate (circle or mark) for each statement, which option represent your past experiences, future interest, and intentions.

Question 1: How much experience do you have caring for grandparents in the past?

[0] None [1] Very Little [2] Some [3] A Great Deal

Question 2: What is the quality of experiences caring for grandparents in the past?

[0] None [1] Very Little [2] Some [3] A Great Deal

Question 3: What experience(s) do you have caring for other old people (aged 65+) as an unpaid job in the past?

[0] None [1] Very Little [2] Some [3] A Great Deal

Question 4: What experience(s) do you have caring for other old people (aged 65+) as a paid job in the past?

[0]	[1]	[2]	[3]
Very Negative	Negative	Neutral Positive	Very Positive

Question 5: The overall quality of the experiences with these persons aged 65 and older in the past?

[0]	[1]	[2]	[3]
Very Negative	Negative	Neutral Positive	Very Positive

Question 6: How would you indicate your interest in geriatric medicine or geriatric nursing as a career?

[1]	[2]	[3]	[4]
No Interest	Very Little Interest	Some Interest	Strong Interest

Question 7: I will choose geriatric medicine or geriatric nursing as my specialty.

[1]	[2]	[3]	[4]
Extremely unlikely	unlikely	Neither likely nor unlikely	Extremely likely

Question 8: I plan to select geriatric nursing as my specialty.

[ ] Yes [ ] No [ ] Not Sure [ ] Other (please specify)

Question 9: Do you know someone (a professional) specializing in geriatric medicine or geriatric nursing?
[ ] Yes [ ] No

Question 10: Do you have a mentor in medicine, or nursing? [ ] Yes [ ] No
If yes, mentor's specialty _____

Question 11: List your three (3) most preferred specialties (in order of most interest).

Question 12: List your three (3) least preferred specialties (in the order of least interest).

PART IV: Demographics

1. Gender: [ ] Male [ ] Female [ ] Other

2. Age range: [ ] 18-25 years [ ] 26-33years [ ] 34-40 years [ ] 41 +

3. Year of school: [ ] Year 1 [ ] Year 2 [ ] Year 3 [ ] Year 4

4. Program: [ ] Medicine [ ] Nursing [ ] Other

End of survey.

GRACE KARIKARI, MPH, PHD, CHES
(Maiden Name: Grace Yeboah Asuamah)

EDUCATION

Doctor of Philosophy **June 2020**
Indiana University School of Public Health, Bloomington, IN
Major: Health Behavior. Minor: Gerontology
Dissertation: Factors Influencing Geriatric Specialization Intention. A Cross-sectional Study of Clinical Medical and Nursing Students in Ghana

Gerontology and Health Graduate Certificate **May 2019**
Indiana University School of Public Health, Bloomington, IN

Master of Public Health **May 2017**
Indiana University School of Public Health, Bloomington, IN
Major: Behavioral, Social and Community Health

Bachelor of Arts (B.A) in Economics **March 2012**
Kwame Nkrumah University of Science and Technology, Ghana
Minors: Sociology & Social Work

Certified Health Education Specialist (CHES) **April 2017**
National Commission for Health Education Credentialing, Inc., Whitehall, PA

PEER-REVIEWED PUBLICATIONS

1. **Karikari, G**., Huber, L., Lohrmann, K. D., & Ozdogan, Z. (2020). Medical students perspectives and consideration of geriatrics for future practice. An exploratory study of a public school in Ghana. *Gerontology and Geriatric Education,* DOI: 10.1080/02701960.2020.1724997
2. Anderson, K. R., Naaman, K., Omodior, E., **Karikari, G**., Pennington-Gray, L., & Omodior, O. (2020). Predicting Chikungunya disease personal protective behaviors: Results of a cross-sectional survey of US-Caribbean travelers. *Health Promotion, 10*(1), 44.
3. **Karikari, G**., Lohrmann, D. K., Huber, L., (Under Review). Stimulators of medical students' interest in geriatric medicine. A systematic review. *Australasian Journal of Ageing.*
4. Hausermann, H., Ferring, D., Atosona, B., Mentz, G., Amankwah, R., Chang, A., Hartfield, K., Effah, E., **Asuamah, G.Y**., Mansell, C. & Sastri, N. (2018). Land-grabbing, land-use transformation and social differentiation: Deconstructing "small-scale" in Ghana's recent gold rush. *World Development, 108*,103- 114.
5. **Karikari, G.** (2018). Promoting dementia-friendly institutions: What do college students know about dementia? A case study. *The Journal of the Alzheimer's Association, 14*(7), P945-P946.

CONFERENCE PRESENTATIONS

1. **Karikari G**., Huber L., & Lohrmann, K. D. Is Ghana Ready for Geriatrics? Medical Students' Interest and Intention Toward Geriatric Specialization in Ghana. Poster presentation at the Gerontological Society of America's 71st Annual Scientific Meeting on November 14, 2019. Austin, Texas.

2. **Karikari G.**, Lohrmann, K. D., & Huber L. Significant Predictors of Interest in Geriatrics Among Low, Middle, and High Income Countries. Poster presentation at the Gerontological Society of America's 71st Annual Scientific Meeting on November 13, 2019. Austin, Texas.
3. **Karikari, G.,** & Wong, S. W. Elder Justice Act (EJA) and Perceived Mistreatment among Elders in the United States. Poster presentation at the 2019 American Public Health Association's Annual Meeting and Expo on November 4, 2019. Philadelphia, Pennsylvania.
4. **Karikari, G.**, Nyanor I., & Nartey K. A. Promoting Specialized Care for the Elderly Population in Ghana: The Role of Geriatric Education. Oral presentation at the 3rd Annual International Ageing Research Conference on October 3, 2019. University of Ghana (Legon). Accra, Ghana.
5. **Karikari, G.** Promoting Dementia Friendly Institutions: What Do College Students Know About Dementia? A Case Study. Poster presentation at the 2018 Alzheimer's Association International Conference (AAIC) on July 23, 2018. Chicago, Illinois.
6. **Karikari, G.** Age-Friendly Bloomington: Creating Community Partnerships to Improve the Health & Wellbeing of the Aging Population. Poster Presentation at the 2018 Indiana Public Health Association (IPHA) Conference on April 17, 2018. Bloomington, Indiana.
7. **Karikari, G.** Aging Policies: A Multi-State Analysis. Oral presentation at the 18th Association of School of Public and Environment Affairs (SPEA) Ph.D. Students Conference on February 16, 2018. Indiana University Bloomington, Indiana.
8. Payne, S., Bovaja, R., **Yeboah Asuamah G.,** & Obeng, C. Breaking the Generational Curse: A Case Study of How Family and Culture Influence Breastfeeding in African-American Women. Oral presentation at the 2017 International Conference on the Theory and Practice of Human Lactation Research and Breastfeeding Management on January 9-13, 2017. Orlando, Florida.

TEACHING EXPERIENCE

Primary Instructor:

- Stress Management and Prevention: Online, 79 undergraduate students (Spring 2019)
- Stress Management and Prevention: 64 undergraduate students (Fall 2018)
- Aging, Health & Diverse Population: Online, 65 undergraduate students (Spring 2018)
- Stress Management and Prevention: 79 undergraduate students (Fall 2017)

Assistant Instructor:

- Marriage and Family Interactions Class, 129 undergraduate students (Fall 2015)
- Marriage and Family Interactions Class, 119 undergraduate students (Fall 2016)
- The Effects of Divorce on Children Class, 100 undergraduate students (Spring 2016)

Guest Lectures:

- Collaborating to Promote the Dementia Friendly Business Initiative (Summer 18)
- Maternal and Child Health around the World (Fall 2015; Spring 2016; Fall 2016; Spring 2017; Fall 2017; Spring 2018)
- Global Contraception Use (Fall 2015; Spring 2016; Fall 2016; Spring 2017; Fall 2017; Spring 2018)
- Pregnancy, Childbirth, and Abortion in the US and Around the World (Fall 2015; Spring 2016; Fall 2016; Spring 2017; Fall 2017, Spring 2018)
- Social Wellness: Promoting Cultural Competency and Sensitivity (Fall 2016)

- The Impact of Institutional Practices on Breastfeeding Initiation (Summer 2016)
- How American Family Life Is Different (Fall 2016; Spring 2017)
- Marriage and Divorce in Ghana, West Africa (Spring 2016)
- Death and Dying in Akan Tribe, Ghana (Fall 2016)
- Healthy Relationships and Communication (Fall 2016; Spring 2017)
- Peers and the Sociocultural World: A West African Perspective (Spring 2015)

PROFESSIONAL EXPERIENCE

Associate Instructor 2017 - 2019
Indiana University School of Public Health, Bloomington, IN

- Teaching various courses of different class sizes, ranging from 64 to 79 students.
- Involved in course planning, classroom organization, communication and presentation.
- Supporting students learning and development in the classroom environment.
- Experienced in teaching both on campus and online courses.

Global Health and Wellness Educator 2015 - 2019
Students Outreach Learning Assessment Coordinator
Indiana University Health Center, Bloomington, IN

- Lead trainings on global health related topics such as global maternal and child health and contraception use around the world.
- Promoted multicultural understanding and integration among students on the Bloomington campus.
- Coordinated evaluations and feedback received from outreaches and academic presentations to assess students learning and attitude changes.

Peer Health and Wellness Education (PHWE) Assistant Programs Coordinator 2016 – 2017
Indiana University Health Center, Bloomington, IN

- Planned several campus health campaigns and education programs including the Virginas, Vulvas and Vibrators (V3) event held on Thursday, October 20, 2016. IU Bloomington.
- Facilitated weekly tobacco cessation outreaches and by-stander interventions. IU Bloomington.

Graduate Assistant 2014 - 2017
Indiana University School of Public Health, Bloomington, IN

- Children's Health Up to Age 5 class assistant to Ms. Jessica Hauser.
- Family and Marriage Interactions class teaching assistant to Dr. Cathlene Hardy-Hansen.
- Leading Family Process Discussion Groups class assistant to Dr. Cathlene Hardy-Hansen.
- Life Span Development class assistant to Ms. Linda Mary Patton.
- Stress Prevention & Management class assistant to Mr. Logan Edwards.
- The Effects of Divorce on Children teaching assistant to Dr. Cathlene Hardy-Hansen.

Grant Writer/Project Coordinator 2012 – 2014
Otumfuo Osei Tutu II Charity Foundation, Kumasi, Ghana

- Served as the temporary coordinator for the Asantehene Lease Documentation Project.
- Administrative Assistant to the Personal Assistant of Her Royal Highness, Lady Julia Osei Tutu.
- Grant proposal writer for the Serwaa Ampem Foundation for Children.
- Organized staff workshops, community outreaches and training programs.

Research Assistant 2011 – 2012

Komfo Anokye Teaching Hospital, Kumasi, Ghana

- Conducted clinical research in rural communities.
- Participated in data collection and analysis.
- Lead community mobilization for health education purposes.
- Organized staff training and workshop programs.

OTHER RESEARCH EXPERIENCE

Indiana University School of Public Health, Bloomington, IN 2018 - Present

Principal Investigator

- Project:
  - Identifying intention to specialize in geriatric medicine and nursing through the measurement of beliefs, attitudes, interest, and experiences. A study of medical and nursing students in Ghana.

Indiana University School of Public Health, Bloomington, IN Jan -May 2017

Principal Investigator

- Projects:
  - International Ghanaian Students Perceptions of Aging and Quality of Life.
  - Promoting Dementia-Friendly Institutions: What Do College Students Know About Dementia?

Komfo Anokye Teaching Hospital's Research & Development Unit, Kumasi, Ghana 2011- 2012

Research Assistant

- Projects:
  - Understanding the Social, Economic and Behavioral Vulnerability to HIV of Women in Bars and Restaurants in Kumasi, Ghana. This was a collaborative research between the Kwame Nkrumah

    University of Science and Technology (KNUST) and the Center for Global Health and Development (CGHD) at Boston University, USA.
  - Research and Education on Buruli Ulcer, Inundation and Land disturbances (REBUILD). Funded by Pennsylvania University, USA and supported by UMAT and KNUST.
  - Affordable Medicines Facility-Malaria (AMFm). Endline survey of Antimalarial outlets in Ghana. Funded by the Global Fund and supported by the Komfo Anokye Teaching Hospital (KATH).
  - Job Satisfaction and the levels of motivation of the staff of Komfo Anokye Teaching Hospital (KATH). Funded by the Research and Development Unit of KATH.
  - Impact of the Annual Staff Awards on the Motivation of Staff. Komfo Anokye Teaching Hospital (KATH).

Team Leader

- Project:
  - Estimating the Economic Cost of Treating an Acute Childhood Illness in the Directorate of Child Health of the Komfo Anokye Teaching Hospital (KATH).

Kwame Nkrumah University of Science and Technology, Kumasi, Ghana 2010 - 2011

Co-Investigator

- Project:
  - Impact of the Student Loan Trust Fund (SLTF) on the consumption of university students. A case study of the Kwame Nkrumah University of Science and Technology (KNUST).

GRANT

- American Cancer Society Tobacco-Free Generation Campus Initiative Grant supported by the CVS Foundation for 2016-2017. Amount: 20,000. Co-grant writer for Indiana University Health Center-Health and Wellness Education.

HONORS AND AWARDS

- John H. Edwards Fellowship Recipient for the 2019-2020 Academic Year. Indiana University Bloomington (Awarded April 2019)
- Roderick Paige Diversity Fellowship Recipient for the 2017-2018 Academic Year. Indiana University, Bloomington. (Awarded August 2017)
- Rural Development and Programme Documentation Recognition. Care International, Kumasi - Gulf of Guinea. (Awarded May 2009)

PUBLIC SERVICE ACTIVITIES & VOLUNTEERISM

- Dementia-Friendly Business Training at the Unitarian Universalist Church of Bloomington, Indiana (2018)
- Cornerstone Christian Fellowship (CCF). Bloomington. IN. Toddler Educator (2015-2018)
- Annual Associate Instructor (AI) Teaching Orientation. Center for Innovative Teaching and Learning. IU Bloomington (2018)
- Sunflower Cooperative Daycare. Indiana University Bloomington. IN. Parent Volunteer (2016-2017)
- 21st Annual Preparing Future Faculty (PFF). Bloomington, IN. Conference Committee Member and Speaker Recruiter (2016)
- 20th Annual Preparing Future Faculty (PFF). Bloomington, IN. Conference Committee Member and Conference Moderator (2015)
- Indiana University Bloomington, IN. Annual IU HIV Test Day organized by Positive Link and IU Health. Volunteer (2014)
- Ronald McDonald House-Riley Children's Hospital, Indianapolis, IN. Guest Service and Lunch Host Volunteer (2014)
- Wheeler Mission Ministries Women's Shelter. Indianapolis, USA. Lunch Host Volunteer (2014)
- Care International, Kumasi Sub-Office, Ghana. Community Mobilizer / Field Assistant (2008)

PROFESSIONAL MEMBERSHIPS

- American Public Health Association, Member (2019 – Present)
- Gerontological Society of America, Member (2019-Present)
- Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment, Member (2018-2019)
- Eta Sigma Gamma Nu Chapter, IU Bloomington, Member (2016 – 2017)
- Master of Public Health Assembly, IU Bloomington, Member (2016 – 2017)
- Sexual Health Advocacy Group. IU Bloomington, Treasurer (2016 – 2017)